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ABSTRACT

Designed for use with high school sophomores, this agribusiness curriculum for city schools contains thirty-one units of instruction in the areas of career opportunities in agribusiness and vocational agribusiness skills. Among the units included are (1) Career Selection, (2) Parliamentary Procedure and Public Speaking, (3) Career Opportunities in Horticulture, (4) Human Relations, (5) Animal Nutrients, (6) Companion Animal Grooming, and (7) Planting Media. Each instructional unit includes objectives, suggested activities, information sheets, assignment sheets, job sheets, transparency masters, a test, and answers to the test. (LRA)

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Nebraska Vocational Agribusiness
for City Schools

CAREER OPPORTUNITIES IN AGRIBUSINESS
BASIC SKILL IN AGRIBUSINESS

A Curriculum Guide
10th Grade

Prepared by
THE DEVELOPMENT OF CURRICULUM MODIFICATIONS FOR
URBAN VOCATIONAL AGRIBUSINESS PROGRAMS IN NEBRASKA
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Institute of Agriculture and Natural Resources
The University of Nebraska-Lincoln
Lincoln, Nebraska
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1980

For Support Through Authorization of the
Nebraska State Board for Vocational Education
Under the Provisions of Sub-Part 3
Of Vocational Education Amendments of 1976

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

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Allen Blezek *Director*
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INTRODUCTION

Vocational education in agriculture has changed. Fewer students each year are returning to the farm and more are entering fields of related agriculture occupations. Teachers of vocational agriculture are faced with the problem of teaching subject matter areas in which they have limited experience and little or no available instructional materials. This has created a challenge for curriculum personnel. The Nebraska Vocational Agriculture Curriculum Project was designed to accept this challenge.

Units of instruction have been developed for Vocational Agriculture to cover eight sections: Career Orientation, Basic Skills of Agribusiness, Horticulture, Agricultural Processing, Production Agriculture, Companion Animals, Natural Resources, and Agricultural Mechanics. The instructional units are designed to account for seventy percent of an instructor's time in teaching vocational agriculture. The remaining thirty percent is left to the individual instructor according to the demands of the local community.

USE OF THIS PUBLICATION

The approach taken in this publication will be unique and quite new to some educators. Teachers, before attempting to teach from this material, should become familiar with it and should understand the *writer's* ideas. This introduction is for the teacher's benefit and explains the most effective use of the publication.

Instructional Units

Each instructional unit includes objectives, suggested activities, information sheets, assignment sheets, job sheets, transparency masters, a test, and answers to the test.

Objectives (White)

Included in each unit of instruction are measurable objectives. These objectives state the goals of the course in such a way that both teacher and student will know the changes in behavior expected to occur as a result of the instruction. In short, objectives are a means of providing a sense of direction and accomplishment for the student.

The measurable objectives are stated in two forms: Unit Objectives stating the subject matter to be covered in a unit of instruction; Specific Objectives stating the performance of the student in order to reach the unit objective. Specific objectives are most important in regard to teaching the unit. Before attempting to teach a unit, unit and specific objectives must be explained to the student in order to tell him what is expected.

Suggested Activities (White)

Each unit of instruction has a Suggested Activities Sheet outlining steps to follow in accomplishing the specific objectives. The activities relate the duties of the instructor to the particular unit. Duties may vary according to the unit and usually include the following: provide students with information sheet and job sheets, make transparencies, discuss unit and specific objectives, discuss information sheet, and give test. Teachers are encouraged to use any additional activities and means of accomplishing objectives.

Information Sheets (Green)

The information sheets contain essential facts necessary for the teaching of a unit of instruction. These sheets should be given to the student. Information sheets can be reproduced at the local school.

Assignment Sheets (Buff)

Assignment sheets are included in units when necessary. An assignment sheet allows the student to practice a writeen skill, such as calculating board feet, before the evaluation is given.

Job Sheets (Blue)

Job sheets are included in units when necessary. A job sheet gives operations necessary to successfully complete a production job. It contains the name of the job, drawings, materials and tools needed, and procedures for completing a job.

Transparency Masters (White)

Transparency masters are charts, pictures, or illustrations printed for use in making overhead transparencies. These are included in units when necessary. A transparency should be made from the transparency master and be shown on an overhead projector to supplement the information.

Test (Yellow)

A test is included at the close of each unit of instruction to measure the specific objectives.

Page Numbering System

Each section in this publication is assigned a specific letter: (A) Plant and Soil Science; (B) Animal Science; (C) Supervised Agricultural Training and Agricultural Business Management; (D) Leadership; (E) Career Selection; (F) Agricultural Mechanics. Pages are numbered consecutively within each section. For example, Career Selection begins with 1-E. If the page is available as a transparency master, TM appears at the bottom of the page.

The following key will help to easily identify each section by color:

White – Objectives, Suggested Activities, Transparency Masters
Green – Information Sheets
Blue – Job Sheets
Buff – Assignment Sheets
Yellow – Test
Pink – Answers to Test

(NOTE: This publication will provide unity of instruction throughout Nebraska in teaching vocational agriculture. The effectiveness of this publication will depend on you as an instructor.)

FOREWORD

This publication is designed to provide basic instruction in Agriculture/Agribusiness (Vocational Agriculture) Education in Nebraska's City Schools.

The problem of what to teach, the resource aids available, and the choices, are problems facing today's Vocational Agriculture/Agribusiness Instructors. This curriculum publication is designed to assist in improving the instructional process and results. In its preparation for use, it has involved many of those who will use the material.

Its purpose is ultimately intended to more adequately prepare the student with knowledge, understanding, and ability in a chosen field.

Appreciation is expressed for the time and effort of the many individuals and groups who assisted in the development of this publication. It is our hope that you may be a more effective teacher through the use of this core curriculum.

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ORIENTATION TO VOCATIONAL AGRICULTURE
UNIT I

UNIT OBJECTIVE

After completion of this unit, the student should be able to match terms associated with vocational agriculture to the proper definition and discuss the importance of vocational agriculture in his/her future as well as the opportunities for personal development offered by vocational agriculture and the FFA. The student should also be able to describe his/her responsibilities as a vocational agriculture student. This knowledge will be evidenced by scoring eighty-five percent on a unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with orientation to vocational agriculture to their correct definition.
2. List three reasons for studying vocational agriculture.
3. List the responsibilities of being a student in vocational agriculture.
4. List five groups of people that vocational agriculture trains and serves.
5. List three activities in which FFA members can participate.
6. Select from a list the areas to be covered (studied) in Vocational Agriculture I.
7. Match the proper description and/or activity with the FFA contest.
8. Match the requirements for the various FFA degrees with the degree.
9. List four major awards areas available through the FFA awards program and ten specific awards included in these areas.
10. Select from a list the types of projects most commonly exhibited at fairs and shows by FFA members.
11. Prepare a list of the more important agricultural enterprises in your home community.

ORIENTATION TO VOCATIONAL AGRICULTURE
UNIT I

SUGGESTED ACTIVITIES

I. Instructor:

  A. Provide students with objective sheet.

  B. Provide students with information sheet.

  C. Discuss unit and specific objectives.

  D. Discuss information and assignment sheets.

  E. Advise students about due date for applications.

  F. Give test.

II. Student:

  A. Read objective sheet.

  B. Study information sheet and take additional notes.

  C. Complete assignment sheet.

  D. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

  A. Objectives

  B. Information sheet

  C. Assignment Sheet #1--List of Important Agricultural Enterprises in Community

  D. Test

  E. Answers to test

II. References:

  A. *Agriculture Is More Than Farming*, prepared by the American Association of Teacher Educators in Agriculture, the National Association of Agricultural Education Supervisors, and the National Vocational Agricultural Teacher's Association, Inc., The Future Farmers Supply Service, Alexandria, Virginia.

B. Stone, Archie A. *Agribusiness and Industry*. Danville, Illinois: Interstate Printers and Publishers, 1965.

C. *Nebraska FFA Contests and Activities*. Lincoln, Nebraska: State of Nebraska, Department of Education, Vocational Agriculture Section, 301 Centennial Mall South.

D. *Nebraska FFA Association Constitution and Bylaws*. (Available from Executive Secretary, Nebraska Association, Future Farmers of America, 301 Centennial Mall South, Lincoln, Nebraska 68509.)

E. Krebs, Alfred H. *Agriculture in Our Lives*. Danville, Illinois: Interstate Printers and Publishers, 1972.

F. *Official Manual*, Future Farmers of America, Alexandria, Virginia, 1976.

G. *Nebraska Agricultural Statistics*. Nebraska Department of Agriculture, State-Federal Division of Agricultural Statistics, 211 Federal Building, Box 81069, Lincoln, Nebraska 68501.

ORIENTATION TO VOCATIONAL AGRICULTURE
UNIT I

INFORMATION SHEET

I. Terms and definitions

   A. Vocational agriculture--Training program to teach young people about the science of agriculture and/or agricultural related occupations and to prepare them for furthering their education or entry into the world of work

   B. Agriculture--Science or art of cultivating the soil, producing crops, raising livestock, and all other aspects created as these products move from producer to consumer

   C. Agricultural related occupations (Agribusiness)--Those operating units that support production agriculture in such ways as marketing, processing, and servicing

   D. Future Farmers of America (FFA)--An organization of national scope for students enrolled in vocational agriculture programs designed to provide training in leadership, citizenship, and cooperation and to complement the total program

II. Reasons for studying vocational agriculture

   A. Importance of national food supply

   B. Awareness of nation's economy

   C. Daily use of farm products

   D. Understanding of agricultural related businesses

   E. Choice of an occupation

   F. Wise usage of our natural resources

   G. (Agricultural statistics to be completed by local department)

   (NOTE: The nature of today's agriculture requires that students be trained in the sciences dealing with animals, plants, and soils, as well as principles of breeding, feeding, disease, and insect control. In every school, instruction is prepared so that it meets the needs of students. Whatever a student ultimately decides to do, the willingness to accept responsibility and to make decisions based on what has been learned in vocational agriculture will be of value.)

III. Responsibilities of vocational agriculture students

   A. Attend classes

B. Carry on a supervised occupational experience program

   1. Actual "hands on" type of experiences

   2. Real life experiences

   3. Learn by doing

   (NOTE: It is this aspect of vocational agriculture that makes it vocational in nature. By having a farming program or gaining work experience in an agricultural business, students become acquainted with the world of work and begin to recognize the importance of preparing for a vocation.)

C. Become an active member of the Future Farmers of America

D. ________________________________ (To be completed by local schools)

IV. Groups that vocational agriculture trains and serves

A. High school students planning to farm

B. High school students planning to work in agricultural-related occupations

C. High school students preparing to further their education in agriculture

D. Young adults establishing themselves in farming, ranching, and/or agribusiness

E. Farmers, ranchers, and/or agribusiness personnel improving their operations

V. FFA activities

A. FFA meetings

B. Committee work

C. Leadership conferences

D. Contests

E. Livestock shows and fairs

F. State and national conventions

G. Parent-Member banquet

H. Field trips

I. Local, state, and national awards

J. Recreation

VI. Major areas of instruction for Vocational Agriculture I

A. Orientation and careers

   1. Agriculture occupations

   2. Choosing your career

INFORMATION SHEET

B. Leadership

  1. Future Farmers of America
  2. Parliamentary procedure
  3. Public speaking

C. Supervised occupational experience program

  1. Exploring areas of interest
  2. Goals
  3. Beginning record keeping

D. Animal science

  1. Livestock industry
  2. Breeds of livestock
  3. Livestock selection
  4. Livestock feeding

E. Plant and soil science

  1. Plant and seed identification
  2. Importance of crop production

F. Agricultural mechanics

  1. Orientation
  2. Fasteners
  3. Arc welding
  4. Gas welding
  5. Farm safety

VII. Contests for the Vocational Agriculture students

  A. Vocational Agriculture contests

    1. Livestock Selection--Ability to select animals for breeding and marketing purposes

INFORMATION SHEET

2. Agronomy--Ability of identifying crops, weeds and soils and answer questions on crop and soil management

3. Livestock Management--Ability to answer questions covering nutrition, feeding, breeding, and management of dairy, beef, sheep, and swine

4. Poultry Management--Ability to answer questions covering poultry production

5. Meat Judging and Identification--Ability to identify meat cuts and evaluate carcasses

6. Milk Quality and Dairy Foods--Ability to evaluate and identify dairy products and equipment

7. Farm Management--Ability to answer questions on economics and solve typical farm management problems

8. Dairy Cattle Selection--Ability to select cattle for production

9. Home Horticulture--Ability to identify horticultural plants and answer questions covering horticultural management

10. Tractor Maintenance--Ability to perform maintenance operations and answer questions covering farm tractors

11. Farm Machinery--Ability to align, calibrate, operate and service farm machinery and answer questions covering machinery topics

12. Metals--Ability to properly use the arc and oxy-acetylene welders

13. Soil and Water Management--Ability to demonstrate skills with survey instruments and answer questions covering soil and water management

14. Farm Wiring--Ability to perform skills necessary for farm wiring.

15. Agricultural Mechanics--Ability to solve problems, perform mechanical skills, and answer written questions covering agricultural mechanical area

B. FFA Contests

1. Chapter Procedure Contest--Ability to transact the business of a meeting in an orderly manner

2. Agricultural Demonstration--Ability to advance agricultural technology through telling and doing

INFORMATION SHEET

3. Creed Speaking--Ability Greenhand to interpret and deliver the FFA Creed in a confident and convincing manner

4. Extemporaneous Speaking--Ability to express themselves on a given subject with minimum preparation

5. Public Speaking--Ability to prepare and deliver a speech on an agricultural topic

6. Wildlife Speaking--Ability to prepare and deliver a speech on a wildlife topic

7. Tractor Operators Contest--Ability to demonstrate skill in safe tractor operation

8. Chapter Books and Records Contests--Ability to properly complete and maintain SOEP Record Books, Secretary's book, Treasurer's book and Chapter Scrap book

9. Crop Production Contests--Ability to apply approved practices in achieving maximum crop yields and quality (NCIA and AK-SAR-BEN)

10. AK-SAR-BEN Livestock Production Award--Ability to promote and increase understandings in livestock production

11. AK-SAR-BEN Farm Betterment Award--Ability to improve the scope and quality of the farm betterment program

12. Land Judging Contest--Ability to evaluate soil, determine land capability classes, and recommend land use practices

13. Range Judging Contest--Ability to apply range management principles

14. Crops Judging Contest--Ability to identify and determine quality of grain samples

VIII. FFA degrees that can be earned

A. Greenhand Degree

1. Awarded by the local chapter signifying achievement of the first level of membership

2. Qualifications for the degree

a. Be enrolled in vocational agriculture

INFORMATION SHEET

   b. Learn and explain the FFA Creed, Motto and Salute
   c. Explain the proper use of the FFA jacket and blazer
   d. Describe the FFA emblem, colors and symbols
   e. Know the history of the organization
   f. Know the duties and responsibilities of FFA members
   g. Have an FFA Manual
   h. Submit written application

B. Star Greenhand--Awarded by the local chapter to the most outstanding Greenhand

C. Chapter Farmer Degree

1. Awarded by the local chapter signifying achievement of the second level of membership

2. Qualifications for the degree

   a. Must have received the Greenhand Degree
   b. Must have completed one semester of instruction in vocational agriculture and have satisfactory scholastic record in this course
   c. Must have earned at least $50 from a supervised training program or worked 50 hours in case of laboratory or agribusiness
   d. Be familiar with local, state, national constitution, purposes, and program activities
   e. Demonstrate five parliamentary procedure abilities
   f. Be able to lead a group discussion for fifteen minutes
   g. Receive a majority vote
   h. Demonstrate achievement in an Agricultural Proficiency Award area
   i. Submit application
   j. Meet local chapter requirements

INFORMATION SHEET

D. Star Chapter Farmer and/or Star Chapter Agribusiness--Awarded at the local level to the most outstanding member in the chapter in the respective area

E. State Farmer Degree (Agribusiness Degree)

   1. Awarded to the top 2½% of the FFA members in the state each year in the ratio of the applications submitted

   2. Qualifications for the degree

      a. Must have chapter Farmer Degree

      b. Must have been in the FFA for at least two years

      c. Must have earned and invested $500 from a supervised training program or have worked at least 600 hours in directed experience program, or a combination thereof

      d. Demonstrate leadership ability by performing ten parliamentary procedure activities, give a five-minute speech, and serve as an officer and/or committee chairman or member

      e. Have satisfactory scholastic record

      f. Participate in the planning and completion of chapter program of activities

      g. Participate in five FFA activities above the chapter level

      h. Pass an FFA test

      i. Meet other state requirements

F. Area Star Farmer and Area Star Agribusinessman

   1. One star farmer and one star agribusinessman for each area annually

   2. Awarded medals from AK-SAR-BEN

G. Star State Farmer and/or Star State Agribusinessman

   1. Awarded a certificate and a check for $200.00 from the national foundation

   2. Qualification--Must have received the State Farmer Degree

H. American Farmer Degree (American Agribusinessman)

INFORMATION SHEET

1. Awarded to the top FFA members in the nation
2. Qualifications for the degree
   - a. Must have received the State Farmer Degree
   - b. Must have been an active FFA member for at least 36 months
   - c. Must have earned at least $1,000 from a supervised training program
   - d. Must have been out of school 12 months

I. Regional Star Farmer and/or Regional Star Agribusinessman

1. Selected from the American Farmer degree winners in the four regions
2. Four Regional Star Farmer and Four Regional Star Agribusinessmen are named yearly in the United States
3. Each are awarded $500.00

J. Star Farmer of America and Star Agribusinessman of America

1. Outstanding FFA member in the nation
2. Must have achieved the American Farmer Degree
3. Awarded annually at the National FFA Convention
4. Each is awarded an additional $500.00

IX. Awards available on the local, state, and national levels

A. Individual Foundation Awards

1. Agricultural Mechanics
2. Soil and Water Management
3. Dairy Production
4. Crop Production
5. Diversified Livestock Production
6. Forestry Management

INFORMATION SHEET

7. Poultry Production
8. Agricultural Electrification
9. Placement in Sales and/or Services
10. Fish and Wildlife Management
11. Placement in Agricultural Production
12. Placement in Processing
13. FFA Public Speaking
14. Home and Farmstead Improvement
15. Ornamental Horticulture
16. Beef Production
17. Swine Production
18. Sheep Production
19. Outdoor Recreation
20. Horse Proficiency
21. Star Greenhand
22. Star Chapter Farmer
23. State Star Farmer-Agribusinessman
24. Star Farmer-Agribusinessman of America

B. Chapter Foundation Recognition Programs

1. Superior Awards--State level
2. Bronze, Silver, Gold--National level
3. Building Our American Communities--District, state, and national level
4. Farm Safety--State and national levels

C. Nebraska Awards for Chapters

INFORMATION SHEET

1. AK-SAR-BEN Outstanding Chapter

2. FFA Cooperatives Award

3. FFA Natural Resources Award

D. State Fair Awards

1. Swine, Sheep, Beef, Dairy and Agricultural Mechanics Sweepstakes Trophies

2. Showmanship Medals

3. Block and Bridle Trophy

X. Common projects exhibited at fairs and shows

A. Market steers and heifers

B. Beef breeding

C. Market swine

D. Swine breeding

E. Market lambs

F. Sheep breeding

G. Dairy

H. Crops exhibits such as seeds or plants

I. Mechanic exhibits

(NOTE: Students enrolled in vocational agriculture and the FFA have the opportunity to exhibit projects at livestock shows and fairs. Most all types of crops and livestock can be exhibited at the fairs and shows.)

ORIENTATION TO VOCATIONAL AGRICULTURE
UNIT I

ASSIGNMENT SHEET NO. 1--LIST OF IMPORTANT AGRICULTURAL ENTERPRISES IN COMMUNITY

Prepare a list of the more important agriculture enterprises in your community. (Discuss this with your instructor after the list is complete.)

ORIENTATION TO VOCATIONAL AGRICULTURE
UNIT I

TEST

1. Match terms on the right with their correct definition.

   _____a. An organization of national scope for students enrolled in vocational agriculture programs designed to provide training in leadership, citizenship, and cooperation and to complement the total program

   _____b. Those operating units that support production agriculture in such ways as marketing, processing, and servicing

   _____c. Science or art of cultivating the soil, producing crops, raising livestock, and all other aspects created as these products move from producer to consumer

   _____d. Training program to teach young people about the science of agriculture and/or agricultural related occupations and to prepare them for futhering their education or entry into the world of work

   1. Vocational agriculture
   2. Agriculture
   3. Future Farmers of America
   4. Agricultural related occupations (Agribusiness)

2. List three reasons for studying vocational agriculture.

   a.

   b.

   c.

3. List the responsibilities of being a student in vocational agriculture.

   a.

b.

c.

d.

4. List five groups of people that vocational agriculture serves and trains.

a.

b.

c.

d.

e.

5. List three activities in which FFA members can participate.

a.

b.

c.

6. Place an "X" by the areas to be covered in Vocational Agriculture I.

___ a. Library science

___ b. Agriculture mechanics

___ c. Chemicals

___ d. Careers

___ e. Leadership

___ f. Political science

___ g. Animal science

___ h. Plant science

___ i. Supervised occupational experience

___ j. Animal reproduction

7. Match the contests on the right with the proper descriptions and/or activities on the left.

___ a. Identifying trees

___ b. Land capability classes

1. Horticultural Judging

2. Chapter Books & Records Contest

___ c. Welding

___ d. Perform mechanical skills

___ e. Wiring

___ f. Surveying

___ g. Farm management problems

___ h. Cheese identification

___ i. A speaking contest for Greenhands only

___ j. Secretary's Book

3. Crops Judging
4. Dairy Cattle Selection
5. Metals Contest
6. Farm Management Contest
7. Farm Wiring Contest
8. Land Judging
9. Agricultural Mechanics Contest
10. Creed Speaking Contest
11. Milk Quality & Dairy Foods
12. Soil and Water Management Contest

8. Match the degree on the right with its proper set of requirements by placing the letter which represents that degree in the correct blank.

___ a.
1) Awarded by local chapter signifying achievement of the first level of membership
2) Be enrolled in vocational agriculture
3) Learn and explain the FFA Creed
4) Know the history of the FFA organization
5) Submit a written application

___ b.
1) Awarded to top FFA members in the nation
2) Must have received the State Farmer Degree
3) Must have been an active FFA member for at least 36 months

G=Greenhand

C=Chapter Farmer

S=State Farmer

A=American Farmer

4) Must have earned at least $1000 from a supervised experience program

___ c. 1) Awarded to top 2½% of the FFA members in the state each year

2) Must have been in the FFA for at least two years

3) Must have earned and invested at least $500 from a supervised experience program

4) Pass an FFA test

___ d. 1) Awarded by local chapter signifying achievement of the second level of membership

2) Must have received the degree of Greenhand

3) Must have completed one semester of instruction in vocational agriculture

4) Must have earned at least $50 from a supervised experience program

9. List four major award areas available through the FFA awards program, and list ten specific awards included in these areas.

a.
b.
c.
d.

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

10. Place an "X" by the projects most commonly exhibited at fairs and shows by FFA members.

___ a. Hot rod car

___ b. Market steers

___ c. Market horses

___ d. Market swine

___ e. Market sheep

___ f. Ewe lambs

___ g. Gilts

___ h. Heifers

___ i. Crops

___ j. Clothing

___ k. Dairy animals

___ l. Plants

___ m. Airplanes

___ n. Mechanics projects

11. Prepare a list of the more important agricultural enterprises in your community.

(NOTE: If this has not been accomplished prior to the test, ask the instructor when the above activity should be completed.)

ORIENTATION TO VOCATIONAL AGRICULTURE
UNIT I

ANSWERS TO TEST

1. a. 3
   b. 4
   c. 2
   d. 1
2. Any three of the following
   a. Importance of national food supply
   b. Awareness of nation's economy
   c. Daily use of farm products
   d. Understanding of agricultural related businesses
   e. Choice of occupation
   f. Wise usage of our natural resources
3. a. Attend classes
   b. Carry on a supervised occupational experience program
   c. Become an active member of the Future Farmers of America
   d. (Local requirements)
4. a. High school students planning to farm
   b. High school students planning to work in agricultural-related occupations
   c. High school students preparing to further their education in agriculture
   d. Young adults establishing themselves in farming, ranching, and/or agribusiness
   e. Farmers, ranchers, and/or agribusinessmen improving their operations
5. Any three of the following
   a. FFA meetings
   b. Committee work
   c. Leadership conferences

d. Contests
e. Livestock shows and fairs
f. State and national conventions
g. Parent-Member banquets
h. Field trips
i. Local, state, and national awards
j. Recreation

6. b, d, e, g, h, i
7. a. 1
   b. 8
   c. 5
   d. 9
   e. 7
   f. 12
   g. 6
   h. 11
   i. 10
   j. 2
8. a. G
   b. A
   c. S
   d. C
9. a. Individual Foundation Awards
   b. Chapter Foundation Recognition Programs
   c. Nebraska Awards for Chapters
   d. State Fair Awards

Any ten of the following

1) Agricultural Mechanics
2) Soil and Water Management
3) Dairy Production
4) Crop Production
5) Diversified Livestock Production
6) Forestry Management
7) Poultry Production
8) Agricultural Electrification
9) Placement in Sales and/or Services
10) Fish and Wildlife Management
11) Placement in Agricultural Production
12) Placement in Processing
13) FFA Public Speaking
14) Home and Farmstead Improvement
15) Ornamental Horticulture
16) Beef Production
17) Swine Production
18) Sheep Production
19) Outdoor Recreation
20) Horse Proficiency
21) Star Greenhand
22) Star Chapter Farmer
23) Star State Farmer/Agribusinessman
24) Star Farmer/Agribusinessman of America
25) Superior Awards--State Level

26) Bronze, Silver, Gold--National level

27) Building Our American Communities--District, state and national levels

28) Farm Safety--State and national levels

29) AK-SAR-BEN Outstanding Chapter

30) FFA Co-operative Awards

31) FFA Natural Resources Award

32) Swine, Sheep, Beef, Dairy and Agricultural Mechanics Sweepstakes Award

33) Showmanship Medals

34) Block and Bridle Trophy

10. b, d, e, f, g, h, i, k, l, n

11. Evaluated to the satisfaction of the instructor

CAREER SELECTION
UNIT II

UNIT OBJECTIVE

After completion of this unit, the student should be able to identify the different career opportunities that are available in the field of agriculture. The student should be able to select a career to pursue upon completion of the high school program and secure as much information as possible related to the selection. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit of instruction, the student should be able to:

1. Match terms associated with career selection to the correct definition.
2. Name and discuss the three main areas of vocational agriculture training as they relate to career selection.
3. Name three reasons for choosing a career.
4. Name four ways in which the agriculture program in which the student is now enrolled will help in preparing for an occupation later in life.
5. Discuss in a short paragraph the benefits of selecting a career involved in agriculture.
6. Name the eight occupational areas that are available in the field of agriculture.
7. Name the eight levels of employement within the occupational areas.
8. Name three sources of information on agricultural careers.
9. Name four important factors to consider when selecting a career.
10. Select the top four occupations based on number of employees need related to agri-business.
11. Select a career and collect as much information as possible concerning qualifications, expected advancement, salary, and the future outlook.
12. Visit a college program that is close to the student's school community and identify the opportunities that are being offered related to a career selection in agriculture.

CAREER SELECTION
UNIT II

SUGGESTED ACTIVITIES

I. Instructor:

   A. Provide students with objective sheet.

   B. Provide students with information and assignment sheets.

   C. Make transparencies.

   D. Discuss unit and specific objectives.

   E. Discuss information and assignment sheets.

   F. Discuss with students the importance of selecting a career.

   G. Take field trip to allow students an opportunity to see the areas of agriculture as they relate to agri-business.

   H. Give test.

II. Students:

   A. Read objectives.

   B. Study information sheets.

   C. Complete assignment sheets.

   D. Participate in field trip.

   E. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

   A. Objectives

   B. Information sheets

   C. Transparency masters

      1. TM 1--Part of a Complete Program

2. TM 2--Agriculture Is More Than Farming
3. TM 3--Three-Way Instruction
4. TM 4--A Path to a Choice
5. TM 5--A Large Segment in the World of Work

D. Assignment sheets

1. Assignment Sheet No. 1--Select and Collect Information on Careers
2. Assignment Sheet No. 2--Visit a College Program and Identify Opportunities Offered Related to Agri-Business

E. Test

F. Answers to test

II. References:

A. Hoover, Norman K. *Handbook of Agricultural Occupations.* Danville, Illinois: The Interstate Printers and Publishers, Inc.

B. Mitchell, Jesse B. *Off-Farm Agri-Business Occupations in Oklahoma.* A research study conducted by the Division of Research, Planning, and Evaluation, State Department of Vocational and Technical Education, Stillwater, Oklahoma.

C. *Occupational Opportunities in Nebraska 1974.* Lincoln, Nebraska: Nebraska Research Coordinating Unit for Vocational Education. (Available from RCU, Henzlik Hall, University of Nebraska-Lincoln.)

CAREER SELECTION
UNIT II

INFORMATION SHEET

I. Terms and definitions

A. Agricultural industry--The industry covering broad areas of agriculture from production, through supplying and servicing, business, finance, and all the necessary functions of making agricultural commodities available to the consumer

B. Agribusiness--Those operating units that support production agriculture including processing and marketing of food and fiber

C. Career--A course of continued progress in the life work of a person or progress through life in a series of related occupations or activities

D. Career pattern--The sequence of occupations in the life of an individual that makes up a career

E. Occupation--A group of related jobs in an area of work which constitutes the work a person does regularly to make a living

F. Occupational choice--A process one goes through eliminating some occupations and retaining others until an occupation has been chosen

G. Job--A piece of work which is rather specific and definite in nature

II. Areas of vocational agriculture training (Transparencies 1, 2, and 3)

A. Production--The area where a student is truly interested in and has the financial capital to become established in farming, and is studying animal science, plant and soil science, records, management, and decision-making

B. Agricultural mechanics--The area where a student is interested in the phase of mechanics and is able to achieve skills in welding, electricity, plumbing, carpentry, small engines, and tractor maintenance

C. Off Farm Agricultural Occupations (OFAO)--The area where a student in high school is interested in the area of sales, services, and distribution and is receiving this training both in the classroom and from on-the-job training at a local business firm

III. Benefits of choosing a career

INFORMATION SHEET

A. Happiness and satisfaction

B. Opportunities for promotion and advancement

C. Financial and fringe benefits

D. Selection of people to work with

IV. Benefits of Vo-Ag program in careet selection

A. Aids student in becoming established in agriculture

B. OFAO experience program prepares for agricultural occupations

C. Production and improvement projects aid in occupational choice

D. School farm aids in occupational choice

E. Studying livestock and crop production helps identify occupations

F. Farm management helps with occupational choice

G. FFA activities teach many important aspects of occupational training

V. Agriculture as a career (Transparencies 4 and 5)

A. Agriculture is more than farming

1. 1/3 of the U.S. Labor force is directly related to the agricultural industry

2. 7.3 million people work on farms

3. Eighteen million employed in directly related fields

4. Over 500 different job titles exist

5. 150,000 agricultural jobs directly related to Nebraska's agriculture

6. 23,600 job openings for agricultural workers in Nebraska

7. Six out of every ten jobs in private employment are directly or indirectly related to agriculture

B. Agriculture is a way of life

VI. Occupational areas

A. Agri-business

INFORMATION SHEET

- B. Communications
- C. Education
- D. Industry
- E. Research
- F. Conservation
- G. Services
- H. Farming-ranching

VII. Level of employment

- A. Professional
- B. Technical
- C. Managerial
- D. Supervisory
- E. Sales
- F. Office
- G. Skilled
- H. Semi-skilled
- I. Unskilled

VIII. Agricultural career information sources

- A. Vocational agriculture instructor
- B. Guidance counselor
- C. Agricultural industries
- D. U.S.D.A. offices
- E. Community colleges
- F. Area vocational-technical schools
- G. University of Nebraska
  - 1. Institute of Agriculture and Natural Resources (College of Agriculture)
  - 2. University of Nebraska School of Technical Agriculture, Curtis

INFORMATION SHEET

IX. Factors to consider when selecting careers

- A. Type of work
- B. Educational training
    - 1. High school
    - 2. Post high school
- C. Financing needed to enter
- D. Means of getting the job
- E. Entry level requirements
- F. Advancement possibilities
- G. Licensing or certification
- H. Working conditions
- I. Health and physical requirements
- J. Earnings and benefits
- K. Future outlook

X. Occupations related to agri-business

- A. Agricultural insurance, finance, real estate
- B. Agricultural supplies, services, and distribution
- C. Agricultural building and construction
- D. Food manufacturing, processing, service, and distribution
- E. Feed and grain manufacturing, processing, and distribution
- F. Livestock industry service and distribution
- G. Ornamental horticulture and floriculture

INFORMATION SHEET

H. Agricultural machinery and equipment

I. Forestry processing and distribution

J. Government services (ASCS, FHA, FLB, SCS)

K. Dairy manufacturing, processing, and distribution

L. Meat processing and distribution

M. Agricultural heavy machinery and equipment service and operation

N. Cotton manufacturing, processing, and distribution

O. Fruit and vegetable processing and distribution

P. Recreation and wildlife

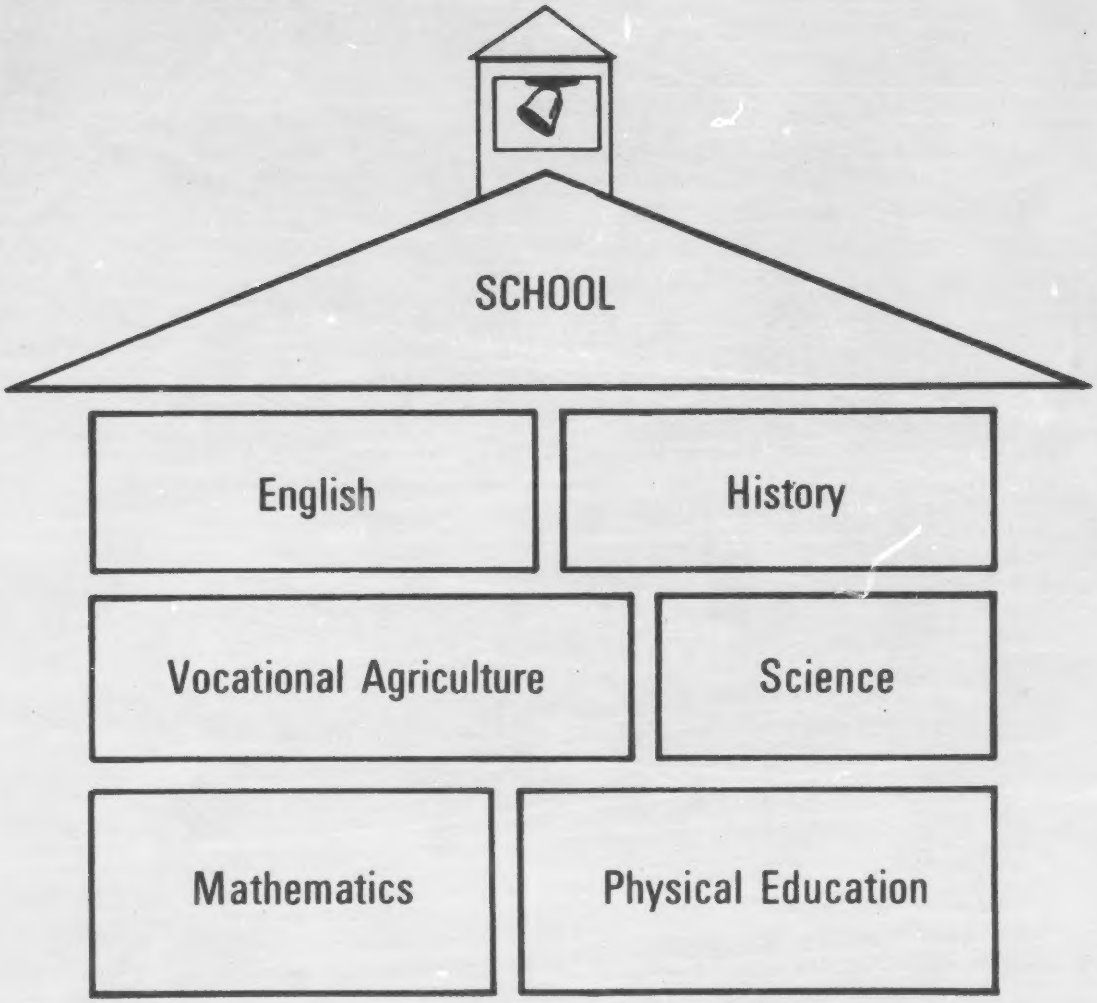
Q. Veterinary supplies, services, and sales

R. Poultry processing, services, and distribution

S. Kennels, pets, supplies, and service

T. Agricultural ecology and environmental protection

Part of a Complete Program



SCHOOL

English

History

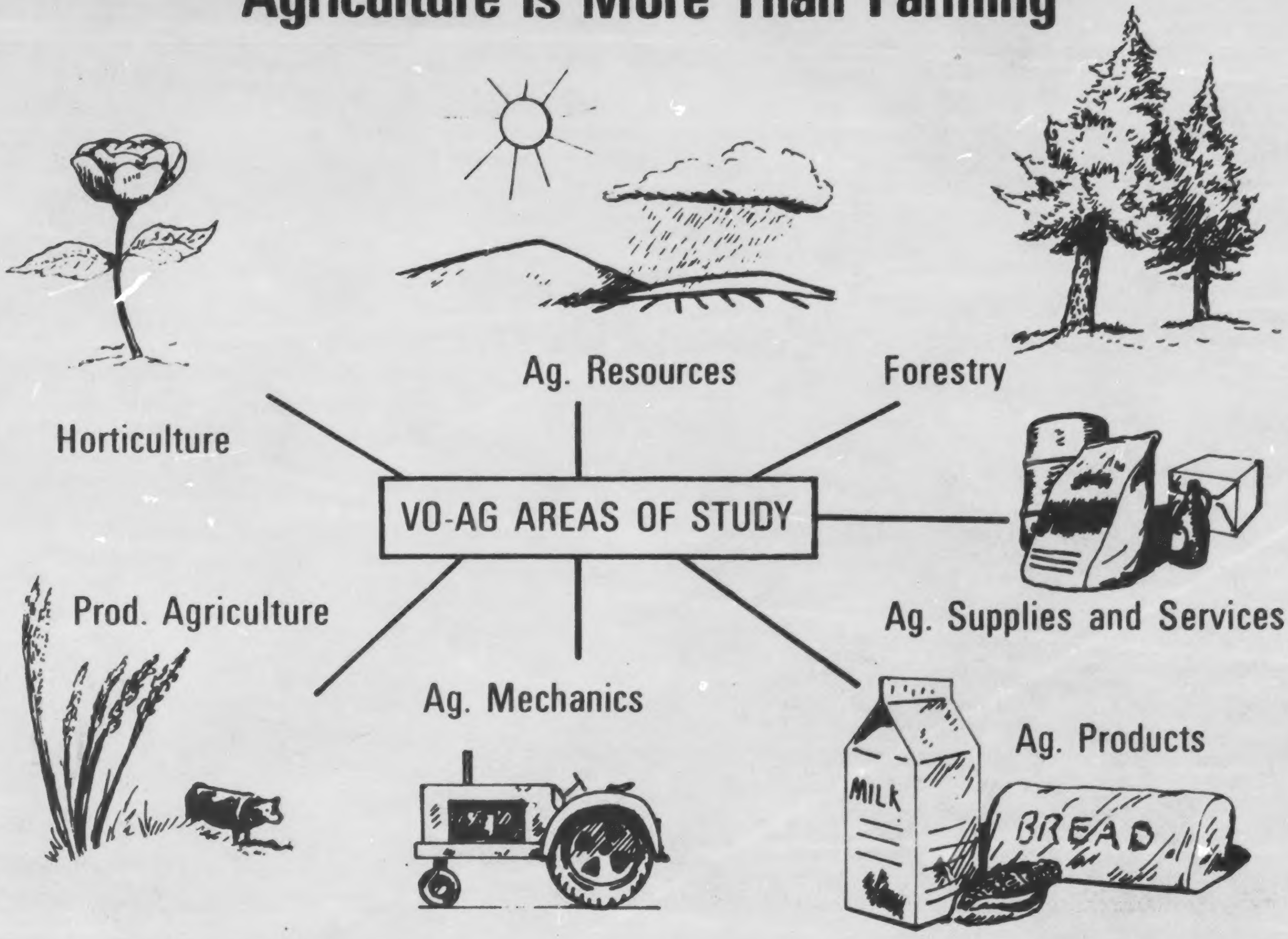
Vocational Agriculture

Science

Mathematics

Physical Education

Agriculture is More Than Farming



VO-AG AREAS OF STUDY

Horticulture

Ag. Resources

Forestry

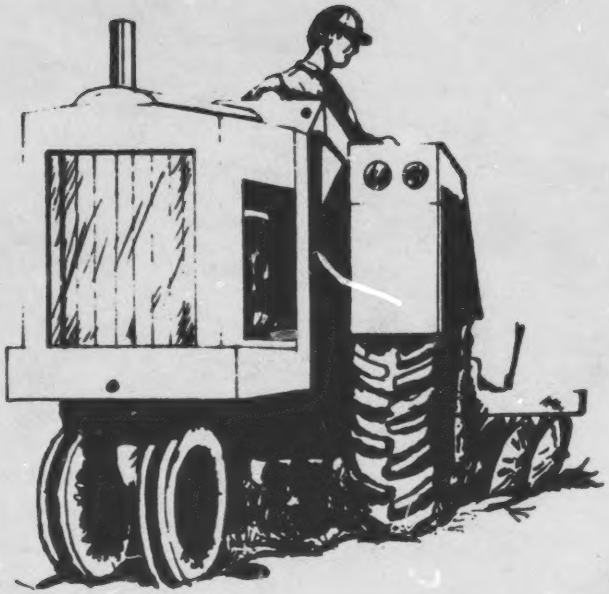
Ag. Supplies and Services

Ag. Products

Ag. Mechanics

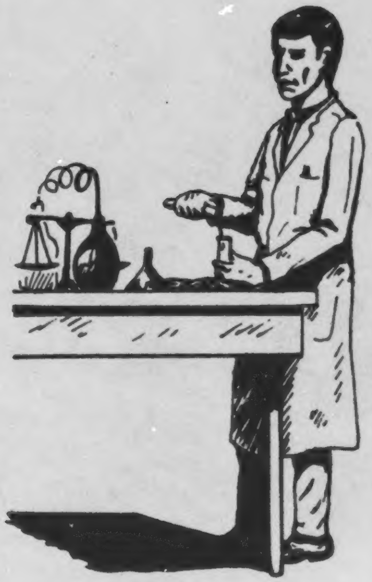
Prod. Agriculture

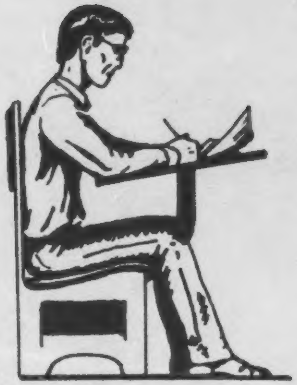
Three-Way Instruction



On The Job

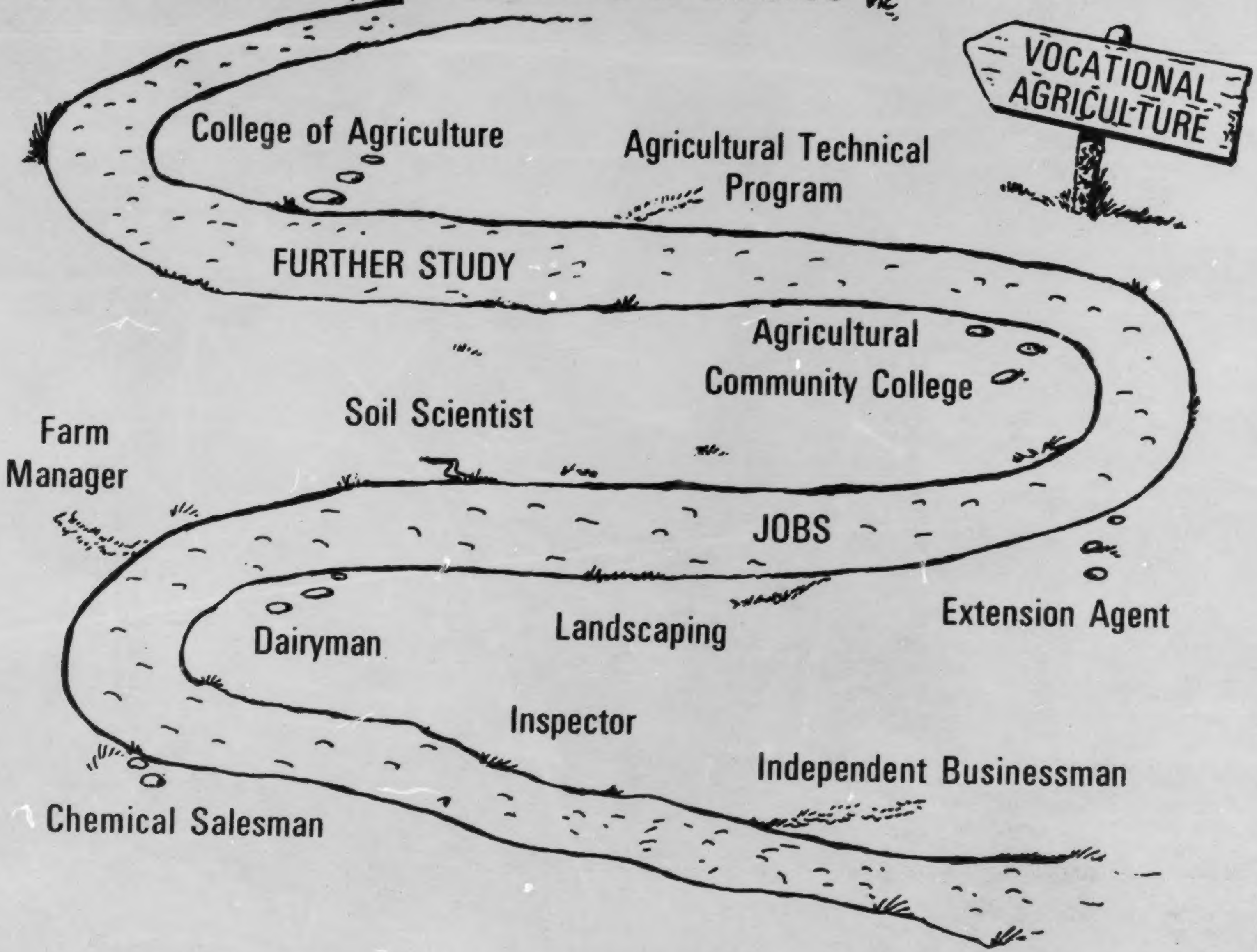
In The Laboratories



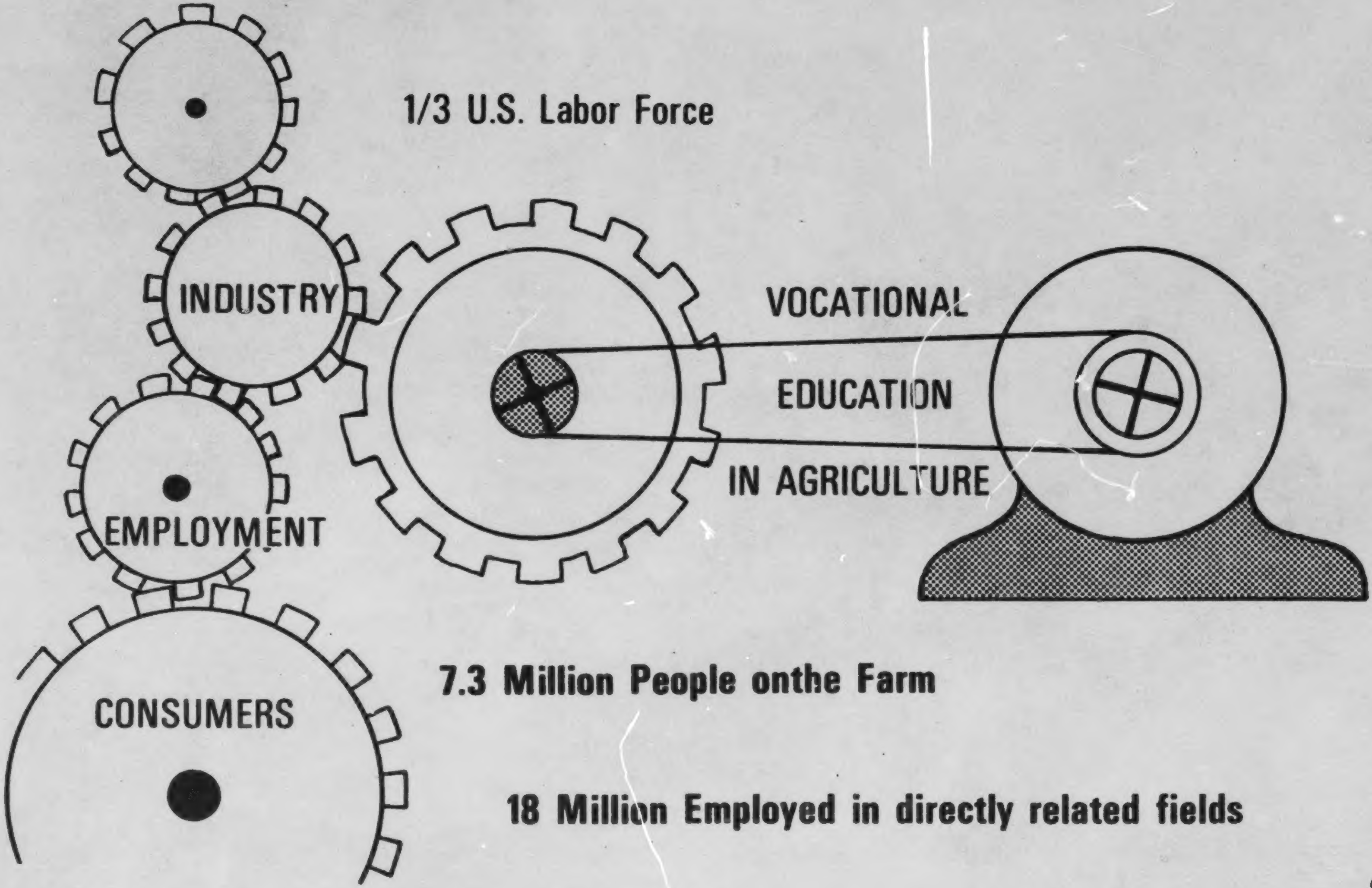


In The Classroom

A Path to a Choice


VOCATIONAL AGRICULTURE
College of Agriculture
Agricultural Technical Program
FURTHER STUDY
Agricultural Community College
Soil Scientist
Farm Manager
JOBS
Dairyman
Landscaping
Extension Agent
Inspector
Independent Businessman
Chemical Salesman

A Large Segment in the World of Work



1/3 U.S. Labor Force

INDUSTRY

EMPLOYMENT

CONSUMERS

VOCATIONAL

EDUCATION

IN AGRICULTURE

7.3 Million People onthe Farm

18 Million Employed in directly related fields

CAREER SELECTION
UNIT II

ASSIGNMENT SHEET NO. 1--SELECT AND COLLECT INFORMATION ON CAREERS

You are approaching the most important time in your life. This is the time when you must choose a career to pursue upon completion of your high school porgram. Much time, thought, and preparation should be given, because the career you are about to select will more than likely become the way of life for you. Select a career that you would like to pursue after graduation and collect as much information as possible about the career. Record the information in the space provided and when completed return to the instructor for his/her evaluation.

Career selected: ______________________________

Level within the occupation: ______________________________

What type of educational training is needed? ______________________________

Does the career selected provide means for advancement? ______________________________

What type of working conditions does the career contain? ______________________________

What are the procedures for obtaining the job? ______________________________

What are the expected earnings and benefits derived from the career previously selected?

Discuss in a short paragraph the reasons for making such a selection on the career choice.

Since you have conducted research on the career, has your attitude changed? if so, in what way? discuss in a short paragraph.

CAREER SELECTION
UNIT II

ASSIGNMENT SHEET NO. 2--VISIT A COLLEGE PROGRAM AND IDENTIFY OPPORTUNITIES OFFERED RELATED TO AGRI-BUSINESS

Visit a junior college or an Area Vocational-Technical School which is providing some type of training related to a career in agri-business. During your visit, collect as much information as possible and record it in the space provided. When completed return to the instructor for his/her evaluation.

School: ____________________ Location: ____________________

1. In what occupational areas is training being given and what is the length of the training?

   a. ____________________

   b. ____________________

   c. ____________________

   d. ____________________

2. What are the job opportunities in each area of training?

   a. ____________________

   b. ____________________

   c. ____________________

   d. ____________________

CAREER SELECTION
UNIT II

TEST

1. Match the terms on the right to the correct definition.

_______ a. A piece of work which is rather specific and definite in nature

_______ b. A process one goes through eliminating some occupations and retaining others until an occupation has been made

_______ c. A group of related jobs in an area of work which constitutes the work a person does regularly to make a living

_______ d. The industry covering the broad areas of agriculture from production, through supplying and servicing, business, finance, and all necessary functions of making agricultural commodities available to the consumer

_______ e. The sequence of occupations in the life of an individual that makes up a career

_______ f. The operating units that support production agriculture, including processing and marketing of food and fiber

_______ g. A course of continued progress in the life work of a person or progress through life in a series of related occupations or activities

1. Agricultural industry
2. Agri-business
3. Career
4. Career pattern
5. Occupation
6. Occupational
7. Job

2. Name and discuss the three main areas of vocational agriculture training as they relate to career selection.

   a.

   b.

   c.

3. Name three reasons for choosing a career.

   a.

   b.

   c.

4. Name four ways in which the agriculture program you are now enrolled in will help you prepare for an occupation.

   a.

   b.

   c.

   d.

5. Discuss in a short paragraph the benefits of selecting a career involved in agriculture.

6. Name the eight occupational areas that are available in the field of agriculture.

   a.

   b.

   c.

   d.

   e.

   f.

   g.

   h.

7. Name the eight levels of employment within the occupational areas.

   a.

   b.

   c.

   d.

   e.

   f.

   g.

   h.

8. Name three sources of information on agricultural careers.

   a.

   b.

   c.

9. Name four important factors to consider when selecting a career.

   a.

   b.

   c.

   d.

10. From the list of occupations below select the top four occupations that lead all other occupations in the number of employees needed in the field of agri-business. Place an "X" in the blanks.

    ______a. Dairy manufacturing, processing, and distribution

    ______b. Meat processing and distribution

    ______c. Agricultural heavy machinery and equipment service and operation

    ______d. Cotton manufacturing, processing, and distribution

    ______e. Fruit and vegetable processing and distribution

    ______f. Recreation and wildlife

___ g. Agricultural insurance, finance, and real estate

___ h. Veterinary supplies, services, and sales

___ i. Poultry processing, services, and distribution

___ j. Kennels, pets, supplies, and service

___ k. Agricultural building and construction

___ l. Government services (ASCS, FHA, FLB, SCS)

___ m. Forestry processing and distribution

___ n. Agricultural machinery and equipment

___ o. Ornamental horticulture and floriculture

___ p. Livestock industry, service, and distribution

___ q. Agricultural supplies, services, and distribution

___ r. Feed and grain manufacturing, processing, and distribution

___ s. Food manufacturing, processing, service, and distribution

___ t. Agricultural ecology and environmental protection

11. Demonstrate the ability to:

    a. Select and collect information on a career related to agriculture.

    b. Visit a college program to find the opportunities that are available in agriculture

CAREER SELECTION
UNIT II

ANSWERS TO TEST

1. 7 a.

   6 b.

   5 c.

   1 d.

   4. e.

   2 f.

   3 g.

2. a. Production--The area where a student is truly interested in and has the financial capital to become established in farming, and is studying animal science, plant and soil science, records, management, and decision-making

   b. Agricultural mechanics--The area where a student is interested in the phase of mechanics and is able to achieve skills in welding, electricity, plumbing, carpentry, small engines, and tractor maintenance

   c. Off-Farm Agricultural Occupations (OFAO)--The area where a student in high school is interested in the area of sales, services, and distribution and is receiving this training both in the classroom and from on-the-job training at a local business firm

3. Any three of the following:

   a. Happiness and satisfaction

   b. Opportunities for promotion and advancement

   c. Financial and fringe benefits

   d. Selection of people to work with

4. Any four of the following:

   a. Aids student in becoming established in agriculture

   b. OFAO programs prepare for agricultural occupations

  - c. Production and improvement projects aid in occupational choice
  - d. School farm aids in occupational choice
  - e. Studying livestock and crop production helps identify occupations
  - f. Farm management helps with occupational choice
  - g. FFA activities teach many important aspects of occupational training

5. The discussion should be to the satisfaction of the instructor and should mention the importance of agriculture to national employment.

6. a. Agri-business
  - b. Communications
  - c. Education
  - d. Industry
  - e. Research
  - f. Conservation
  - g. Services
  - h. Farming-ranching

7. Any eight of the following:
  - a. Professional
  - b. Technical
  - c. Managerial
  - d. Supervisory
  - e. Sales
  - f. Office
  - g. Skilled
  - h. Semi-skilled
  - i. Unskilled

8. Any three of the following:
  - a. Vocational agriculture instructor

   - b. Guidance counselor
   - c. Agricultural industries
   - d. U.S.D.A. offices
   - e. Community colleges
   - f. Area vocational-technical schools
   - g. The University of Nebraska, Institute of Agriculture and Natural Resources or The University of Nebraska School of Technical Agriculture

9. Any four of the following:
   - a. Type of work
   - b. Educational training
   - c. Financing needed to enter
   - d. Means of getting the job
   - e. Entry level requirements
   - f. Advancement possibilities
   - g. Licensing or certification
   - h. Working conditions
   - i. Health and physical requirements
   - j. Earnings and benefits
   - k. Future outlook

10. g, k, q, s, t

11. Performance skills will be evaluated by the instructor.

INTRODUCTION TO THE FUTURE FARMERS OF AMERICA

UNIT III

UNIT OBJECTIVE

After completion of this unit, the student should be able to discuss the organization and operation of a local chapter and describe the purposes of the organization. The student should also be able to write a brief history and discuss the requirements for membership. This knowledge will be evidenced by scoring eighty-five percent on a unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Write a short paragraph describing major events in the history of the Future Farmers of America.
2. List the requirements for membership in the FFA.
3. Select from a list the types of membership in the FFA.
4. Name the official FFA colors.
5. Write the FFA motto.
6. Recite the FFA creed.
7. List the five symbols which make up the FFA emblem and the meaning of each.
8. Select from a list of terms the four degrees of active membership.
9. Name the seven main offices of the local chapter and one duty of each.
10. Name the officers of the state association.
11. Identify the symbols of the FFA officers' stations.
12. List four essentials of a good chapter.
13. Select from a list the primary aim of the FFA.
14. List four of the specific purposes of FFA.

INTRODUCTION TO THE FUTURE FARMERS OF AMERICA
UNIT III

SUGGESTED ACTIVITIES

I. Instructor:

- A. Provide students with objective sheet.
- B. Provide students with information sheet.
- C. Make transparencies.
- D. Discuss unit and specific objectives.
- E. Discuss information sheet.
- F. Provide students with the official FFA manual.
- G. Give test.

(NOTE: Instructor may want to secure films on "Four Star Farmers" or "Focus on Forty" to show to class. It may also be helpful to have a former FFA member to talk to the class.)

II. Student:

- A. Read objectives.
- B. Study information sheet.
- C. Recite the creed.
- D. Become an active member in local chapter.
- E. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

- A. Objectives
- B. Information sheet
- C. Transparency master: TM 1--Symbols of the Officer's Station
- D. Test
- E. Answers to test

II. References:

A. *Vocational Agriculture and the FFA*. The Future Farmers of America in cooperation with the Agricultural Education Branch of the Office of Education, Department of Health, Education, and Welfare, Washington, D.C.

B. *Official Manual*. Alexandria, Virginia: Future Farmers of America, 1976.

C. *The Future Farmers of America Organization, What It Is, What It Does*. The Future Farmers of America Foundation, Inc., in cooperation with the Divison of Vocational and Technical Education, U.S. Office of Education, Washington, D.C.

D. Selland, Larry and Dennis Torrence. *Advisors Teaching Guide on the FFA*. FFA Fellows, University of Maryland, 1968-1969.

E. "FFA Advisors Handbook." Alexandria, Virginia: Future Farmers of America, 1976.

INTRODUCTION TO THE FUTURE FARMERS OF AMERICA
UNIT III

INFORMATION SHEET

I. Brief history of the FFA

   A. Organized nationally in 1928 at Kansas City, Missouri

   B. Nebraska--The sixth state chartered in 1928

   C. National convention held each November at Kansas City

   D. State convention--Nebraska--Held each April at Lincoln

   E. State advisor--Mr. B. E. Gingery

   F. State executive secretary--Dr. Ted Ward

   G. 500,385 members in approximately 8,000 chapters throughout 49 states and Puerto Rico

   H. 6,571 members in 137 Nebraska chapters

   I. Admitted girls into the organization in 1969

   J. Official song--"Hail the FFA"

II. Requirement for membership

   A. 14-21 Years of age

   B. Enrolled in vocational agriculture

   C. Be in good standing with local chapter

   D. (Local requirements)

III. Types of membership in the FFA

   A. Active

   B. Honorary

   C. Alumni

   D. Collegiate

IV. Official FFA colors--National blue and corn gold

V. FFA motto

Learning to do, Doing to learn,
Earning to live, Living to serve

INFORMATION SHEET

VI. The FFA creed

I believe in the future of farming, with a faith born not of words but of deeds--achievements won by the present and past generations of agriculturists; in the promise of better days through better ways, even as the better things we now enjoy have come to us from the struggles of former years.

I believe that to live and work on a good farm, or to be engaged in other agricultural pursuit, is pleasant as well as challenging; for I know the joys and discomforts of agricultural life and hold an inborn fondness for those associations which, even in hours of discouragement, I cannot deny.

I believe in leadership from ourselves and respect from others. I believe in my own ability to work efficiently and think clearly, with such knowledge and skill as I can secure, and in the ability of progressive agriculturists to serve our own and the public interest in producing and marketing the product of our toil.

I believe in less dependence on begging and more power in bargaining; in the life abundant and enough honest wealth to help make it so--for others as well as myself; in less need for charity and more of it when needed; in being happy myself and playing square with those whose happiness depends upon me.

I believe that rural America can and will hold true to the best traditions of our national life and that I can exert an influence in my home and community which will stand solid for my part in that inspiring task.

The creed was written by E. M. Tiffany, and adopted at the 3rd National Convention of the FFA. Revised at the 38th Convention.

VII. Symbols of the FFA emblem

A. Owl--Symbolic of wisdom and knowledge

B. Plow--Symbolic of labor and tillage of the soil

C. Rising Sun--Symbolic of a new day (era) in agriculture

D. Cross-section of the ear of corn--Symbolic of common agricultural interests

E. American Eagle--Symbolic of the national scope of the organization

VIII. Degrees of active membership

A. Greenhand

B. Chapter Farmer

C. State Farmer

D. American Farmer

INFORMATION SHEET

IX. Offices of the local chapter and duties

(NOTE: Every chapter should at least have the first seven offices.)

- A. President--Presides over all meetings
- B. Vice-President--Assists president and directs all committee work
- C. Secretary--Keeps minutes of all meetings
- D. Treasurer--Keeps financial records
- E. Reporter--Reports chapter news and completes chapter scrapbook
- F. Sentinel--Assists president in maintaining order
- G. Advisor--Advises FFA members on all matters relating to the chapter
- H. Parliamentarian--Informs the members on correct parliamentary procedure

X. State FFA officers (to be completed by teacher)

- A. President--
- B. Secretary--
- C. Area Vice-Presidents--SE--

  NE--

  C--

  W--
- D. Area Chairman--SE--

  NE--

  C--

  W--
- E. Advisor--
- F. Executive secretary--

XI. Symbols of FFA officer's station (Transparency 1)

- A. Rising sun--President
- B. Plow--Vice-President
- C. Ear of corn--Secretary
- D. Bust of Washington--Treasurer

INFORMATION SHEET

E. American Flag--Reporter

F. Shield of Friendship--Sentinel

G. Owl--Advisor

XII. Essentials of a good chapter

A. Knowledge of the FFA on the part of every member

B. Capable officers and leaders

C. Responsibilities shared by all members in chapter activities

D. A challenging program of activities

E. Adequate financing for chapter activities

F. Proper paraphernalia, equipment and records

G. Well planned, regularly held chapter meetings

H. Support by school officials and community leaders

XIII. Primary aim of FFA--Development of agricultural leadership, cooperation, and citizenship

XIV. Specific purposes of FFA

A. To develop competent, aggressive, rural, and agricultural leadership

B. To create and nurture love of country life

C. To strengthen the confidence of students of Vocational Agriculture in themselves and their work

D. To create more interest in the intelligent choice of agricultural occupations

E. To encourage members to improve the farm home and its surroundings

F. To encourage members in the development of individual farming programs and establishment in agricultural careers

G. To participate in worthy undertakings for the improvement of agriculture

H. To develop character, train for useful citizenship, and foster patriotism

I. To participate in cooperative effort

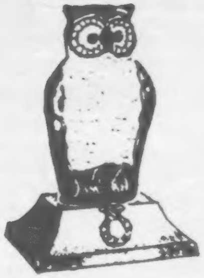
INFORMATION SHEET

J. To encourage and practice thrift

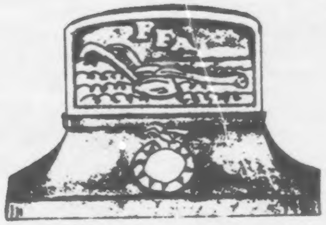
K. To encourage improvement in scholarships

L. To provide and encourage the development of organized rural recreational activities

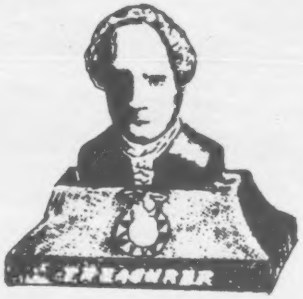
Symbols of Officer's Stations



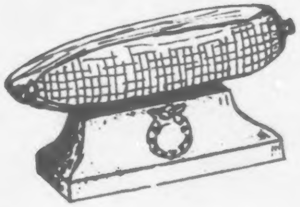
Advisor



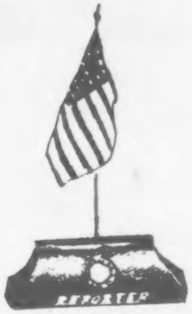
Vice-President



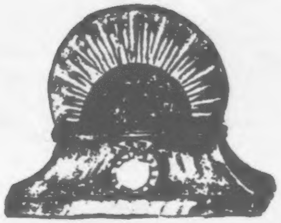
Treasurer



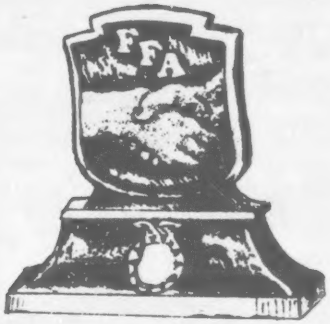
Secretary



Reporter



President



Sentinel

INTRODUCTION TO THE FUTURE FARMERS OF AMERICA
UNIT III

TEST

1. Write a short paragraph describing major events in the history of the Future Farmers of America.

2. List the requirements for membership in the FFA.

   a.

   b.

   c.

   d.

3. Select from the list below the types of membership in the FFA by placing an "X" in the correct blanks.

   ______a. Active

   ______b. Associate

   ______c. Collegiate

   ______d. Inactive

   ______e. Honorary

   ______f. Regular

   ______g. Chapter Farmer

   ______h. Alumni

4. The official FFA colors are ______________________ and ____________.

5. Write the FFA motto.

6. Recite the FFA creed.

   (NOTE: If this activity has not been accomplished prior to the test, ask the instructor when it should be completed.)

7. List the five symbols which make up the FFA emblem and the meaning of each.

   a.

   b.

   c.

   d.

   e.

8. Select from a list of terms below the four degrees of active membership by placing an "X" in the correct blanks.

   ______a. Honorary

   ______b. Chapter Farmer

   ______c. Alumni

   ______d. Associate

   ______e. Greenhand

   ______f. American Farmer

   ______g. Regular farmer

   ______h. State Farmer

9. Name the seven main officers of the local chapter and one duty of each.

   a.

   b.

   c.

   d.

   e.

   f.

   g.

10. Name the following officers of the state association.

   a. President--

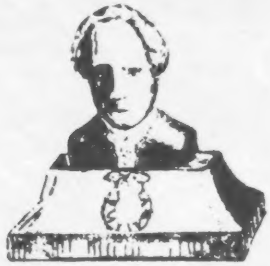
   b. Secretary--

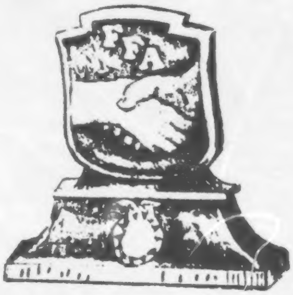
c. Advisor--

d. Area Vice-President--

e. Executive Secretary--

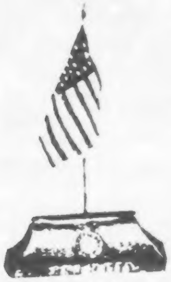
11. Identify the FFA officers' symbols from the following diagrams.

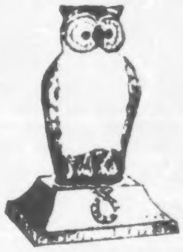




a. ____________________

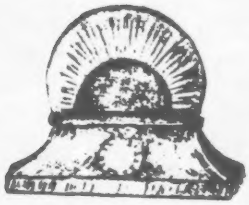
b. ____________________

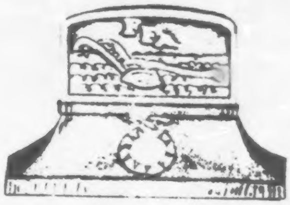




c. ____________________

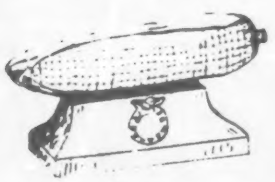
d. ____________________





e. ____________________

f. ____________________



g. ____________________

12. List four essentials of a good chapter.

    a.

    b.

    c.

    d.

13. Underline the primary aim of the Future Farmers of America.

    a. The development of leadership

    b. The maturing of the individual

    c. The development of self-confidence

    d. The development of agricultural leadership, cooperation, and citizenship

14. List four of the specific purposes of FFA.

    a.

    b.

    c.

    d.

INTRODUCTION TO THE FUTURE FARMERS OF AMERICA
UNIT III

ANSWERS TO TEST

1. Description should include the following
   - a. Organized nationally in 1928 at Kansas City, Missouri
   - b. Nebraska has number six charter
   - c. National convention held at Kansas City in November annually
   - d. Nebraska--State convention held in April at Lincoln
   - e. --State advisor
   - f. --State executive secretary
   - g. 500,385 members in approximately 8,000 chapters throughout 49 states and Puerto Rico
   - h. 6,571 members in 137 chapters in Nebraska
   - i. Admitted girls into the FFA in 1969
   - j. Official song--"Hail the FFA"
2. a. 14-21 years of age
   - b. Enrolled in vocational agriculture
   - c. Be in good standing with local chapter
   - d. (Local requirements)
3. a, c, e, h
4. National blue, corn gold
5. Learning to do,
   Doing to learn,
   Earning to live,
   Living to serve.
6. This should be completed before test time. Evaluated to the satisfaction of the instructor.
7. a. Owl--Symbolic of knowledge and wisdom
   - b. Plow--Symbolic of labor and tillage of soil
   - c. Rising sun--Symbolic of a new day (era) in agriculture

d. Cross section of ear of corn--Symbolic of common agricultural interests

e. American Eagle--Symbolic of the national scope of the organization

8. b, e, f, h

9. a. President--Presides over all meetings

b. Vice President--Assists president and directs all committee work

c. Secretary--Keeps minutes of all meetings

d. Treasurer--Keeps financial records

e. Reporter--Reports chapter news and complete chapter scrapbook

f. Sentinel--Assists president in maintaining order

g. Advisor--Advises FFA members on all matters relating to the chapter

10. (To be completed by instructor each year)

a. President--

b. Secretary--

c. Advisor--

d. Area Vice-President--

e. Executive Secretary--

11. a. Treasurer

b. Sentinel

c. Reporter

d. Advisor

e. President

f. Vice-President

g. Secretary

12. Any four of the following

a. Knowledge of the FFA on the part of every member

b. Capable officers and leaders

c. Responsibilities shared by all members in chapter activities

d. Challenging program of activities

e. Adequate financing for chapter activities

f. Proper paraphernalia, equipment, and records

g. Well planned, regularly held chapter meetings

h. Support by school officials and community leaders

13. d

14. Any four of the following

a. To develop competent, aggressive, rural, and agricultural leadership

b. To create and nurture love of country life

c. To strengthen the confidence of farm boys and young men in themselves and their work

d. To create more interest in the intelligent choice of farming occupations

e. To encourage members to improve the farm house and its surroundings

f. To encourage members in the development of individual farming programs and establishment in farming

g. To participate in worthy undertakings for the improvement of agriculture

h. To develop character, train for useful citizenship, and foster patriotism

i. To participate in cooperative effort

j. To encourage and practice thrift

k. To encourage improvement in scholarships

l. To provide and encourage the development of organized rural recreational activities

DUTIES AND RESPONSIBILITIES OF FFA MEMBERS
UNIT IV

UNIT OBJECTIVE

After completion of this unit, the student should be able to discuss the duties and responsibilities of being an FFA member. The student should be able to organize the order of business for a meeting and discuss the areas of the program of activities. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on a unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. List the order of business for a FFA meeting.
2. List six items that constitute a good FFA meeting.
3. Identify the location of the FFA officers' stations during a FFA meeting when given a diagram of the meeting room.
4. List five areas in the program of activities.
5. List the purposes for which committees are formed.
6. Discuss in a paragraph the proper use of the FFA jacket or blazer.
7. List six items in the code of ethics.
8. List five leadership activities that would apply to the FFA chapter and community.
9. List three purposes of the Future Farmer Supply Service as related to the local chapter.
10. Describe two activities in which a local chapter can participate or sponsor during national FFA week.
11. Complete checklist on successful chapter operation.

DUTIES AND RESPONSIBILITIES OF FFA MEMBERS
UNIT IV

SUGGESTED ACTIVITIES

I. Instructor:

  A. Provide students with objectives.

  B. Provide students with information and assignment sheets.

  C. Make transparency.

  D. Discuss unit and specific objectives.

  E. Discuss information sheet.

  F. Discuss assignment sheet. Have each student complete the assignment sheet before discussing it with the class and officers.

  G. Give test.

II. Students:

  A. Read objectives.

  B. Study information sheet.

  C. Complete assignment sheet.

  D. Become actively involved in the local chapter's activities.

  E. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

  A. Objective sheets

  B. Information sheet

  C. Transparency master: TM 1 & 2--Room Arrangement for FFA Meeting

  D. Assignment Sheet #1--Checklist on Successful Chapter Operations

  E. Test

  F. Answer to test

II. References:

A. *Official Manual*. Alexandria, Virginia: Future Farmers of America, 1976.

B. Gray, Farrell D. and J. R. Jackson. *Leadership Training and Parliamentary Procedure for FFA*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1958.

C. "FFA Advisors Handbook." Alexandria, Virginia: Future Farmers of America, 1976.

DUTIES AND RESPONSIBILITIES OF FFA MEMBERS
UNIT IV

INFORMATION SHEET

I. Order of business for FFA meetings

   A. Opening ceremony

   B. Minutes of the previous meeting

   C. Orders of the day

   D. Officers' reports

   E. Reports on chapter program of activities

   F. Special features

   G. Unfinished business

   H. Committees' reports

      1. Standing

      2. Special

   I. New business

   J. Degree and installation ceremonies

   (NOTE: Used only when new members are initiated, when Greenhands are raised to the Chapter Farmer degree, or when officers are installed.)

   K. Closing ceremony

   L. Entertainment, recreation, refreshments

II. Items that constitute a good FFA meeting

   A. Effective use of an executive committee to assure careful planning in advance of the meeting time

   B. Starts and closes on time

   C. Proceeds according to an established order of business

   D. Conducted according to accepted parliamentary procedure

   E. Includes well-prepared committees', secretary's and treasurer's reports

INFORMATION SHEET

F. Shows that each officer is familiar with his or her duties and responsibilities

G. Commands the interest and attention of all members

H. Provides for maximum member participation and develops the cooperative attitude

I. Includes business, entertainment features, and refreshments

J. Moves along with "snap" thus preventing monotony and the wasting of time

K. Proceeds with a minimum of active participation by the Advisor

III. Location of FFA officers' stations in the meeting room (Transparency 1 & 2)

IV. Areas covered in program of activities

A. Supervised agricultural occupations experience

B. Cooperation

C. Community Service

D. Leadership

E. Earnings, savings and investments

F. Conduct of meetings

G. Scholarship

H. Recreation

I. FFA Public relations

J. State and national activities

K. Alumni Relations

(NOTE: Chapter executive committee should appoint each person to a committee on the program of activities.)

V. Purposes for which committees are formed

A. To reach chapter goals

1. Superior chapter award

2. National chapter award

INFORMATION SHEET

        a. Bronze emblem chapter

        b. Silver emblem chapter

        c. Gold emblem chapter

    B. To accomplish specific work assignments

    C. To deal with specific problems

    D. To research and make recommendations about new areas of interest

    E. To provide an opportunity for leadership experience for each member

VI. Proper wear of FFA jacket or blazer

    A. The jacket or blazer should only be worn by persons who are members of the organization

    B. It should be kept clean and neat at all times

    C. The jacket should have only a large emblem on the back and a small emblem on the front; the name of the State Association and the name of the local chapter on the back; and the name of the individual and one office or honor on the front

    D. For the most attractive appearance, the jacket should be worn on official occasions with the zipper fastened to the top. The collar should be turned down and the cuffs in place and buttoned

    E. The jacket or blazer should be worn by officers and members on all official FFA occasions, as well as other occasions where the chapter is represented. It may be worn to school and other appropriate places

    F. The jacket or blazer should only be worn to places that are appropriate for members to visit

    G. The jacket should be worn by contestants in the National Public Speaking Contest, and at other occasions when FFA members are receiving FFA awards

    H. School letters and insignia of other organizations should not be attached to or worn on the jacket

    I. The jacket or blazer should not be worn with garments bearing the insignia of other organizations

    J. When the jacket becomes too faded and worn to wear in public, it should be discarded or the emblems and lettering should be removed

INFORMATION SHEET

K. The emblems and lettering should be removed if the jacket or blazer is given or sold to a non-member

L. A member always acts like a lady or gentleman when wearing the jacket or blazer

M. Members should refrain from smoking while wearing the FFA jacket or blazer or when officially representing the organization

N. All chapter degree, officer, and award medals should be worn beneath the name on the right side of the jacket, with the exception that a single State Farmer charm and American Farmer key should be worn above the name or attached to a standard key chain. No more than three medals should be worn on the jacket; these should represent the highest degree earned, the highest office held, and the highest award earned by the member

VII. Code of ethics for FFA members

A. Dress neatly and appropriately for the occasion

B. Show respect for the rights of others and be courteous at all times

C. Be honest and do not take unfair advantage of others

D. Respect property of others

E. Refrain from loud, boisterous talk, swearing, and horseplay

F. Demonstrate sportsmanship in the show ring, judging contests, and meetings

G. Attend meetings promptly and respect the opinions of others in discussion

H. Take pride in the FFA organization, activities, farming programs, exhibits, and in the occupation of farming and ranching

I. Share with others experiences and knowledge gained by attending national and state meetings

VIII. Leadership activities

A. Provide special training for newly elected officers

B. Elect auxiliary officers

C. Conduct chapter public speaking contest

D. Provide experience in parliamentary procedure

E. Provide experience in conducting meetings

INFORMATION SHEET

- F. Participate in the Nebraska FFA Leadership Development Conference
- G. Send members to national, state, and district conventions and contests
- H. Encourage sending president to FFA National Leadership Conference
- I. Provide committee work

  (NOTE: Each member should be assigned to a standing committee.)
- J. Assist members to apply for the higher degrees
- K. Encourage participation in school activities that involve leadership
- L. Encourage participation in community activities

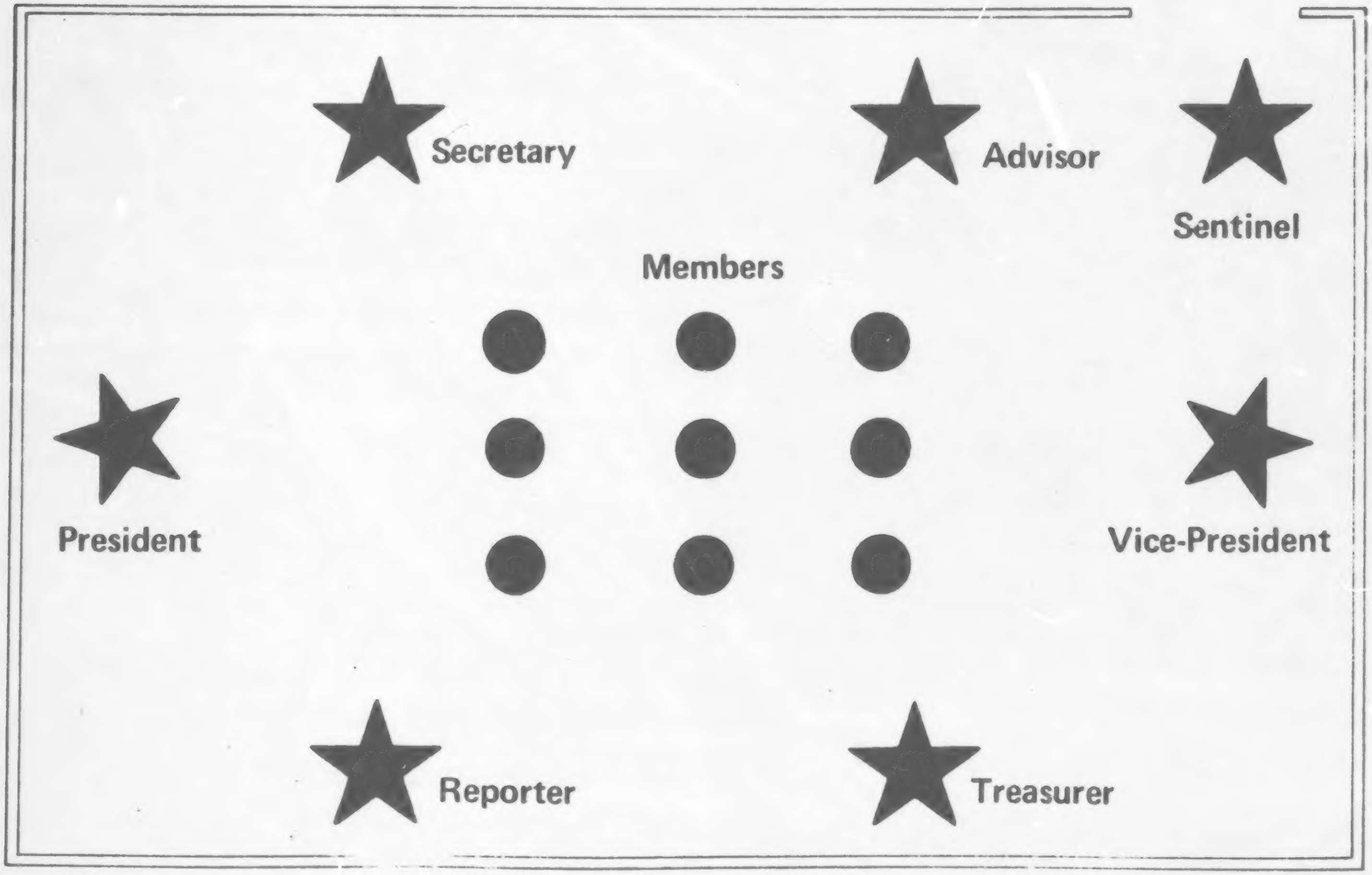
IX. Purposes of Future Farmer Supply Service

- A. Supplies all official FFA merchandise
- B. Insures uniformity in official FFA merchandise
- C. Provides high-quality official merchandise

X. National FFA Week activities

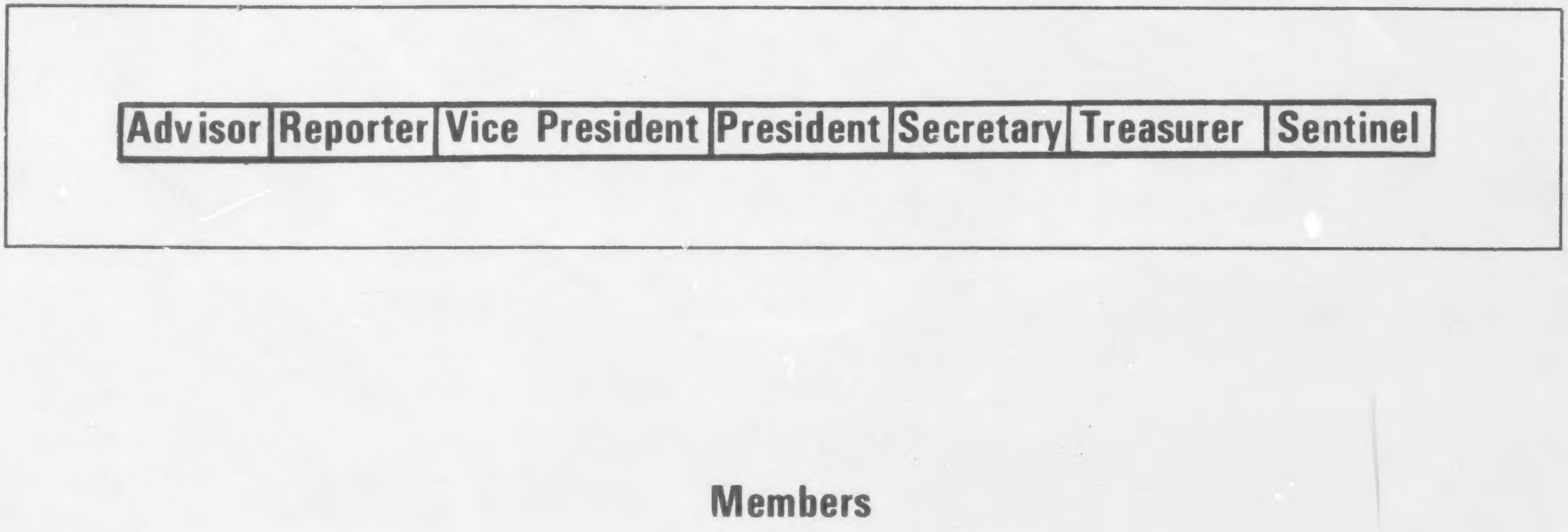
- A. Radio and TV programs
- B. FFA Week articles in newspapers
- C. School assembly
- D. Civic club program
- E. Parent and son banquet
- F. Posters displayed around town
- G. Attend church as a group
- H. Window displays
- I. Others that the chapter approves

Room Arrangement for FFA Meeting


Secretary
Advisor
Sentinel
Members
President
Vice-President
Reporter
Treasurer

Alternate Room Arrangement For FFA Meeting

Unofficial


Advisor
Reporter
Vice President
President
Secretary
Treasurer
Sentinel
Members

DUTIES AND RESPONSIBILITIES OF FFA MEMBERS
UNIT IV
ASSIGNMENT SHEET NO. 1--CHECKLIST ON SUCCESSFUL CHAPTER OPERATIONS

Each member should complete the checklist evaluating chapter cooperation. Answer each question yes or no.

________ 1. Are the officers selected through a nominating committee on the basis of special qualifications? ______ Do they meet frequently to plan work and receive assistance?

________ 2. Are school authorities and others concerned consulted and kept informed on the activities of the chapter?

________ 3. Does the chapter have a written program of activities formulated by the members? ___________ Was last year's program completed?

________ 4. Is there a committee functioning on each division of the present program of activities?

________ 5. Does the chapter have a written budget based primarily on the program of activities and a sound plan developed for securing the necessary funds with which to operate?

________ 6. Is the expenditure of chapter funds properly safeguarded?

________ 7. Do a high percentage of members get experience in the work of the chapter and do they have definite responsibilities that contribute to its success or failure?

________ 8. Does the chapter possess the standard meeting equipment and is it properly mounted and protected?

________ 9. Has a satisfactory system of chapter records and reports been developed?

________ 10. Is at least one planned meeting held each month when sufficient time is available to take care of all chapter business? ________ Is the program for each chapter meeting posted in advance? __________ Is accepted parliamentary procedure followed?

________ 11. Does the chapter name an executive committee with power to act for the chapter when necessary?

________ 12. Do all of the students enrolled in vocational agriculture belong to the chapter? Are qualified members advanced systematically to higher degrees of membership?

________ 13. Does the chapter have over ninety percent of its members in attendance at regular meetings?

________ 14. Do a high percentage of members know what they should about FFA? ___________ Is systematic, continuous leadership training given to all members starting with them as Greenhands?

DUTIES AND RESPONSIBILITIES OF FFA MEMBERS
UNIT IV
TEST

1. List the order of business for a FFA meeting.
   a.
   b.
   c.
   d.
   e.
   f.
   g.
   h.
   i.
   j.
   k.
   l.
2. List six items that constitute a good FFA meeting.
   a.
   b.
   c.
   d.
   e.
   f.

3. Identify the location of the FFA officers' stations for a FFA meeting by stating the correct office in the blanks provided.

a. ______________________

b. ______________________

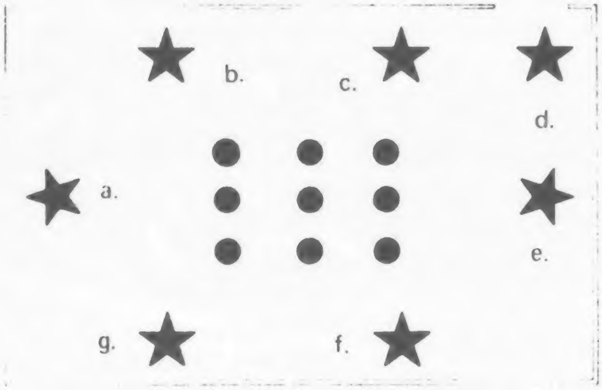
c. ______________________

d. ______________________

e. ______________________

f. ______________________

g. ______________________



4. List five areas of the program of activities.

a.

b.

c.

d.

e.

5. List the purposes for which committees are formed.

   a.

   b.

   c.

   d.

6. Discuss in a short paragraph the proper use of the FFA jacket or blazer.

7. List six items in the code of ethics.

   a.

   b.

   c.

   d.

   e.

   f.

8. List five leadership activities that would apply to the FFA chapter and community.

   a.

   b.

   c.

   d.

   e.

9. List three purposes of the Future Farmers Supply Service as related to the local chapter.

   a.

   b.

   c.

10. Describe briefly two activities that a local chapter can participate or sponsor during National FFA Week.

    a.

    b.

11. Complete checklist on successful chapter operation.

    (NOTE: If this has not been accomplished prior to the test, ask the instructor when the above activity should be completed.)

DUTIES AND RESPONSIBILITIES OF FFA MEMBERS
UNIT IV

ANSWERS TO TEST

1. a. Opening ceremony
   b. Minutes of previous meeting
   c. Orders of the day
   d. Officers' reports
   e. Reports on chapter program of activities
   f. Special features
   g. Unfinished business
   h. Committees' reports
   i. New business
   j. Degree and installation ceremonies
   k. Closing ceremony
   l. Entertainment, recreation, refreshments

2. Any six of the following
   a. Effective use of an executive committee to assure careful planning in advance of the meeting time
   b. Starts and closes on time
   c. Proceeds according to an established order of business
   d. Conducted according to accepted parliamentary procedure
   e. Includes well-prepared committees', secretary's treasurer's reports
   f. Shows that each officer is familiar with his or her duties and responsibilities
   g. Commands the interest and attention of all members
   h. Provides for maximum member participation and develops the cooperative attitude
   i. Includes business, entertainment features, and refreshments

- j. Moves along with "snap" thus preventing monotony and the wasting of time
- k. Proceeds with a minimum of active participation by the Advisor

3. a. President
   - b. Secretary
   - c. Advisor
   - d. Sentinel
   - e. Vice-President
   - f. Treasurer
   - g. Reporter

4. Any five of the following
   - a. Supervised agricultural occupations experience
   - b. Cooperation
   - c. Community service
   - d. Leadership
   - e. Earnings, savings and investments
   - f. Conduct of meeting
   - g. Scholarship
   - h. Recreation
   - i. FFA Public relations
   - j. Participation in state and national activities
   - k. Alumni relations

5. a. To reach chapter goals
   - b. To accomplish specific work assignments
   - c. To deal with specific problems
   - d. To research and make recommendations about new areas of interest
   - e. To provide an opportunity for leadership experience for each member

6. Discussion should include some of the following
   - a. The jacket or blazer should only be worn by persons who are members of the organization

- b. It should be kept clean and neat at all times
- c. The jacket should have only a large emblem on the back and a small emblem on the front; the name of the State Association and the name of the local chapter on the back; and the name of the individual and one office or honor on the front
- d. For the most attractive appearance, the jacket should be worn on official occasions with the zipper fastened to the top. The collar should be turned down and the cuffs in place and buttoned
- e. The jacket or blazer should be worn by officers and members on all official FFA occasions, as well as other occasions where the chapter is represented. It may be worn to school and other appropriate places
- f. The jacket or blazer should only be worn to places that are appropriate for members to visit
- g. The jacket should be worn by contestants in the National Public Speaking Contest, and at other occasions when FFA members are receiving FFA awards
- h. School letters and insignia of other organizations should not be attached to or worn on the jacket
- i. The jacket or blazer should not be worn with garments bearing the insignia of other organizations
- j. When the jacket becomes too faded and worn to wear in public, it should be discarded or the emblems and lettering should be removed
- k. The emblems and lettering should be removed if the jacket or blazer is given or sold to a non-member
- l. A member always acts like a lady or gentleman when wearing the jacket or blazer
- m. Members should refrain from smoking while wearing the FFA jacket or blazer or officially representing the organization
- n. All chapter degree, officer, and award medals should be worn beneath the name on the right side of the jacket, with the exception that a single State Farmer charm and American Farmer key should be worn above the name or attached to a standard key chain. No more than three medals should be worn on the jacket; these should represent the highest degree earned, the highest office held, and the highest award earned by the member

7. Any six of the following
   - a. Dress neatly and appropriately for the occasion
   - b. Show respect for the rights of others and be courteous at all times
   - c. Be honest and do not take unfair advantage of others

d. Respect property of others

e. Refrain from loud, boisterous talk, swearing, and horseplay

f. Demonstrate sportsmanship in the show ring, judging contests, and meetings

g. Attend meetings promptly and respect the opinions of others in discussion

h. Take pride in the FFA organization, activities, farming programs, exhibits, and in the occupation of farming and ranching

i. Share with others experiences and knowledge gained by attending national and state meetings

8. Any five of the following

a. Provide special training for newly elected officers

b. Elect auxiliary officers

c. Conduct chapter public speaking contest

d. Provide experience in parliamentary procedure

e. Provide experience in conducting meetings

f. Participate in Nebraska FFA Leadership Development Conference

g. Send members to national, state, and district conventions and contests

h. Encourage sending president to FFA National Leadership Conference

i. Provide committee work

j. Assist members to apply for the higher degrees

k. Encourage participation in school activities that involve leadership

l. Encourage participation in community activities

9. a. Supplies all official FFA merchandise

b. Insures uniformity in official FFA merchandise

c. Provides high quality official merchandise

10. Description should include any two of the following

a. Radio and TV programs

b. FFA Week articles in newspapers

c. School assembly

d. Civic club program

e. Parent and son banquet

f. Posters displayed around town

g. Attend church as a group

h. Window displays

i. Others that the chapter approves

11. Evaluated to the satisfaction of the instructor.

PARLIAMENTARY PROCEDURE AND PUBLIC SPEAKING
UNIT V

UNIT OBJECTIVE

After completion of this unit, the student should be able to apply correct parliamentary procedure in a meeting situation for all offices and as a member. The student should also be able to write and deliver a speech over a topic of the student's choice. This knowledge and skills will be evidenced through actual demonstration and by scoring eighty-five percent on a unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. List two principles upon which parliamentary procedure is based.
2. Select from a list three characteristics of a good chairman.
3. Match types of motions with the appropriate definition.
4. Write the characteristics of the kinds of motions used in conducting a meeting.
5. List three purposes for making a speech.
6. Write the outline that most speeches follow.
7. List the three "ups" of speech delivery.
8. List four different speech contests in which FFA members may participate.
9. Demonstrate the ability to:
    a. Use parliamentary procedure currently.
    b. Write and deliver a speech five to eight minutes in length.

PARLIAMENTARY PROCEDURE AND PUBLIC SPEAKING
UNIT V

SUGGESTED ACTIVITIES

I. Instructor:

   A. Provide students with objective sheet.

   B. Provide students with information sheet.

   C. Discuss unit and specific objectives.

   D. Have student conduct a business meeting using correct parliamentary procedure.

   E. Have students give speeches.

   F. Give test.

II. Student:

   A. Read objective sheet.

   B. Study information sheet.

   C. Participate in discussion in business meetings and serve as chairman at least once.

   D. Write and deliver a speech.

   E. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

   A. Objective sheet

   B. Information sheet

   C. Test

   D. Answers to test

II. References:

   A. Jones, O. Garfield. *Parliamentary Procedure at a Glance*. New York: Meredith Press, 1949.

B. Stewart, Wilbur F. *Helps in Mastering Parliamentary Procedure*. New Concord, Ohio: Co-op Printshop, 1954.

C. Jones, O. Garfield. *Senior Manual for Group Leadership*. New York: Appleton-Century-Crofts, Inc., 1949.

D. Sturgis, Alice F. *Parliamentary Procedure*. New York: McGraw-Hill Book Co., Inc.

E. Cruzan, R. M. *Practical Parliamentary Procedure*. Bloomington, Illinois: McKnight and McKnight, 1954.

F. Sutherland, S. S. *When You Preside*. Danville, Illinois: Interstate Printers and Publishers, 1959.

G. Russell, K. E. *A Handbook for Conducting FFA Meetings*. Danville, Illinois: Interstate Printers and Publishers, 1967.

H. *FFA Official Manual*. Alexandria, Virginia: Future Farmers Supply Service, 1976.

I. Carnegie, Dale. *Public Speaking and Influencing Men in Business*. Association Press, 1961.

J. Judson, Lyman S. *Public Speaking for Future Farmers*. Danville, Illinois: Interstate Printers and Publishers, 1957.

K. *Leadership of Youth Groups: Communications Skills*. Kansas City, Missouri: Farmland Industries, 1967.

L. Ross, Robert W. *Oral Presentation and Visual Aids*. Washington, D. C.: R. W. Ross Associates.

M. Gray, Jarrell D. and J. R. Jackson. *Leadership Training and Parliamentary Procedure for FFA*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1958.

N. Purkey, R. D. *Handbook on Speech for FFA*. Danville, Illinois: Interstate Printers and Publishers, 1958.

O. Page, R. E. "Gus" and Cecil D. Maynard. *OSU Extension Facts*, "Parliamentary Procedure." Stillwater, Oklahoma: Extension Service, Oklahoma State University, 1969.

P. "FFA Advisors Handbook." Alexandria, Virginia: Future Farmers of America, 1976.

Q. Robert, Henry M. *Robert's Rules of Order Revised*. New York: Scott Foresman and Company, 1951.

PARLIAMENTARY PROCEDURE AND PUBLIC SPEAKING
UNIT V

INFORMATION SHEET

I. Principles upon which parliamentary procedure is based

  A. One thing at a time

  B. Courtesy to everyone

  C. Rules of the majority

  D. Rights of the minority

II. Characteristics of a good chairman

  A. He presides, he does not direct

  B. Must not enter into discussion

  C. Does not introduce new items of business

  D. Have thorough knowledge of parliamentary law

III. Types of motions

  A. Privileged Motions — takes precedence of all other motions

  B. Incidental Motions — arises out of another motion, has no fixed rank, takes precedence of the motions out of which they arise

  C. Subsidiary Motions — may be applied to a main motion or certain other motions for the purpose of modifying, delaying action, or otherwise disposing of them

  D. Main Motions — bring before the assembly an item of business

  E. Unclassified Motions — does not pertain to any other motion on the floor, is of lowest priority, pertains only to old business

IV. Table of Motions and Rules that Apply to Motions (extra sheet)

V. Purposes for making a speech

  A. To inform

  B. To entertain

INFORMATION SHEET

- C. To persuade
- VI. Speech outline
  - A. Introduction
  - B. Body
  - C. Conclusion
- VII. Three "ups" of speech delivery
  - A. Stand up (avoid leaning on podium)
  - B. Speak up
  - C. Shut up (short conclusion)
- VIII. FFA speeches

  (NOTE: FFA speaking contests will be scored the same as the National FFA contest. A score sheet is included. District contests are generally in February and March. The state contest is at the State FFA Convention.)

  - A. FFA public speaking
    - 1. Content
      - a. Six to eight minutes
      - b. Any current subject of agricultural nature
    - 2. Sponsor--National FFA Foundation
  - B. FFA Wildlife Conservation speaking
    - 1. Content
      - a. Six to eight minutes
      - b. Assigned topic covering wildlife management
    - 2. Sponsor--Nebraska Chapter of National Wildlife Federation
  - C. Extemporaneous Speaking
    - 1. Content

INFORMATION SHEET

        - a. Two and one-half to three minutes
        - b. Assigned agricultural topic
    - 2. Special rules
        - a. Only sophomores and certain juniors may compete
        - b. Topic is drawn ten minutes before speech is delivered
    - 3. Sponsor--Farmland Industries
- D. Creed Speaking
    - 1. Content
        - a. Recitation of FFA Creed
        - b. Three-minute questioning period
    - 2. Special rules
        - a. Greenhands only
        - b. Ninth or tenth grade Vocational Agriculture students
        - c. First year in Vocational Agriculture
    - 3. Sponsor--Sunland Plans

INFORMATION SHEET

IX. Table of Motions and Rules That Apply to Motions

Motions	May Interrupt	Required Second Speaker	Debatable	Amendable	Vote Required
A. Privileged					
1. To adjourn–time & place	No	Yes	Limited	Yes	Maj.
2. To adjourn	No	Yes	No	No	Maj.
3. To take a recess	No	Yes	Limited	Yes	Maj.
4. Question of privilege	Yes	No	No	No	Chmn.rules
5. Call for order of day	Yes	No	No	No	None
B. Incidental					
1. Point of order	Yes	No	No	No	Chmn.rules
2. Appeal	Yes	Yes	Yes	No	Maj.
3. Suspend rules	No	Yes	No	No	2/3
4. Withdraw a motion	No	No	No	No	Maj.
5. Parliamentary inquiry	Yes	No	No	No	Chmn.rules
6. Object to consider	Yes	No	No	No	2/3
7. Call for division of the house	Yes	No	No	No	Maj.
8. To call for a division of a question	No	Yes	No	No	Chmn.rules
9. To request to leave to withdraw	No	No	No	No	Chmn.rules
C. Subsidiary					
1. Lay on table	No	Yes	No	No	Maj.
2. Previous question	No	Yes	No	No	2/3
3. Limit debate	No	Yes	No	Yes	2/3
4. To postpone to a certain time	No	Yes	Yes	Yes	Maj.
5. Refer to committee	No	Yes	Yes	Yes	Maj.
6. Amend	No	Yes	Yes	Yes	Maj.
7. Postpone indefinitely	No	Yes	Yes	No	Maj.
D. Main Motions					
1. General main motion	No	Yes	Yes	Yes	Maj.
E. Unclassified Motions					
1. To take from table	No	Yes	No	No	Maj.
2. To reconsider	Yes	Yes	Yes	No	Maj.
3. To Rescind	No	No	Yes	Yes	2/3 - or Notice [illegible]en Maj.

Information Sheet

Judges Score Sheet

State Public Speaking Contest -- Future Farmers of America

Part I For Scoring And Composition

Items to be scored	Points Allowed	Points Awarded Contestants							
		1	2	3	4	5	6	7	8
1. Content of Manuscript Importance and appropriateness of subject Suitability of the material used Accuracy of the Statements included Evidence of purpose Completeness and accuracy of bibliography	200								
2. Composition of Speech - Manuscript Organization of content — Language used Unity of thought — Sentence structure Logical development — Accomplishment of purpose	100								
Part II For Scoring Delivery of the Production:									
Items to be scored	Points Allowed								
1. Voice Pitch — Articulation — Quality Force — Pronunciation	100								
2. Stage Presence Personal appearance — Attitude Poise and body posture — Confidence Ease before audience — Personality	100								
3. Power of Expression Fluency — Directness Emphasis — Communicative ability Sincerity — Conveyance of thought and meaning	200								
4 Response to Questions Ability to satisfactorily answer the questions on the speech which are asked by the judges indicating originality, familiarity with subject, and ability to think quickly	200								
5. General Effect Extent to which the speech was interesting, understandable, convincing, pleasing, and held attention	100								
Total	1,000								
Less time each minute	20								
Grand Totals									
Numerical - or Final placing of contestants									

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PARLIAMENTARY PROCEDURE AND PUBLIC SPEAKING
UNIT V

TEST

1. List two principles upon which parliamentary procedure is based.

   a.

   b.

2. List three characteristics of a good chairman.

   a.

   b.

   c.

3. Match the types of motions with the appropriate definition.

   _____a. To end meeting
   _____b. To close debate
   _____c. Main idea before the group
   _____d. To change the main idea
   _____e. Used when the chair has made an error

   1. Main motion
   2. Amendment
   3. Adjournment
   4. To reconsider
   5. Point of order

4. Write the characteristics of motions by filling in the blanks in the following table.

	Second Required	Debatable	Vote Required	Amendable
a. Main motion				
b. Amendment				
c. Adjournment				
d. Lay on table				
e. Point of order				

5. List three purposes for making a speech.
   a.
   b.
   c.
6. Write the outline form that most speeches follow.
   a.
   b.
   c.
7. List the three "ups" of speech delivery.
   a.
   b.
   c.
8. List four speech contests in which FFA members may participate.
   a.
   b.
   c.
   d.
9. Demonstrate the ability to:
   a. Use parliamentary procedure correctly.
   b. Write and deliver a five to eight minute speech.

PARLIAMENTARY PROCEDURE AND PUBLIC SPEAKING
UNIT V

ANSWERS TO TEST

1. a. The right of the majority to rule
   b. The right of the minority to be heard and protected
2. a. Be impartial
   b. Inspire confidence in the members
   c. Provide leadership
3. a. 3
   b. 4
   c. 1
   d. 2
   e. 5
4.

a.	Main motion	Yes	Yes	Yes	Majority
b.	Amendment	Yes	Yes	Yes	Majority
c.	Adjournment	Yes	No	No	Majority
d.	Lay on table	Yes	No	No	Majority
e.	Point of order	No	No	No	None

5. a. To inform
   b. To entertain
   c. To persuade
6. a. Introduction
   b. Discussion
   c. Conclusion
7. a. Stand up (avoid leaning on podium)
   b. Speak up
   c. Shut up (short conclusion)

8. Any five of the following
    a. FFA public speaking
    b. FFA Wildlife Conservation speaking
    c. Extemporaneous speaking
    d. Creed speaking
9. Performance skills will be evaluated to the satisfaction of the instructor.

PLANNING AND IMPLEMENTING THE SUPERVISED OCCUPATIONAL EXPERIENCE PROGRAM
UNIT VI

UNIT OBJECTIVE

After completion of this unit, the student should be able to select an occupational experience program from the various types available, establish goals for his/her four years in Vocational Agriculture, and set ways and means for reaching those goals. The student should also be able to open, make entries, and close out a record book. This knowledge will be evidenced through actual demonstration and by scoring eighty-five percent on a unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Describe the five types of supervised occupational experience programs.
2. Distinguish between a supplementary agricultural skill and a betterment project.
3. List five reasons for having a supervised occupational experience program.
4. List three sources of securing agricultural occupational experience programs.
5. Discuss the preparation necessary before securing an agricultural occupational experience program.
6. Select from a list the requirements for the state farmer and/or state agribusinessman degree.
7. Select from a list the records that should be kept in the students' record books.
8. Demonstrate the ability to:
   a. Complete a sample problem in the record book.
   b. Complete all pages in the record book that pertain to the student's projects.

PLANNING AND IMPLEMENTING THE SUPERVISED OCCUPATIONAL EXPERIENCE PROGRAM
UNIT VI

SUGGESTED ACTIVITIES

I. Instructor:

   A. Provide students with objectives.

   B. Provide students with a manual of the supervised occupational experience programs in agriculture.

   C. Provide students with a manual of the Nebraska Vocational Agriculture supervised expereience program record book.

   D. Provide students with information and assignment sheets.

   E. Discuss unit and specific objectives.

   F. Discuss the information sheet.

   G. Prepare necessary transparencies from the Nebraska Vocational Agriculture Supervised Experience Program Record Book.

   H. Discuss the record book and have each student begin records of his program in the record book.

   I. Give test.

II. Student:

   A. Read objectives.

   B. Study manual and record book.

   C. Study record book.

   D. Study information sheet.

   E. Complete assignment sheet.

   F. Select projects and begin record keeping

   G. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

A. Objectives

B. Information sheet

C. Transparency masters

1. TM 1--Budget worksheet
2. TM 2--Budget worksheet (continued)
3. TM 3--Budget worksheet (continued)
4. TM 4--Budget worksheet (continued)
5. TM 5--Budget worksheet (continued)
6. TM 6--Budget worksheet (continued)
7. TM 7--Budget worksheet (continued)
8. TM 8--Budget worksheet (continued)
9. TM 9--Inventory and Additional Investments
10. TM 10--Income Record
11. TM 11--Income Record (continued)
12. TM 12--Expense Record
13. TM 13--Financial Summary

D. Assignment Sheet

E. Answers to assignment sheet

F. Test

G. Answers to test

II. **References:**

A. *Nebraska Vocational Agriculture Supervised Experience Program Record Book.* Published by the Nebraska Vocational Agriculture Association and the Journal Printers, Fairbury, Nebraska 68352.

B. *Manual of Supervised Occupational Experience Programs in Agriculture.* Nebraska Vocational Agriculture Association.

C. *Supervised Occupational Experience in Agriculture.* French-Bray Printing Co., Candler Building, Baltimore, Maryland 21202.

D. *Teachers Guide for Supervised Occupational Experience in Agriculture.* French-Bray Printing Co., Candler Building, Baltimore, Maryland 21202.

E. "Official FFA Manual," Alexandria, Virginia: Future Farmers Supply Service.

F. *Nebraska State FFA Constitution and By-Laws.* Lincoln, Nebraska: State of Nebraska, Department of Education, Vocational Agriculture Section, FFA Executive Secretary, 301 Centennial Mall South.

PLANNING AND IMPLEMENTING THE SUPERVISED OCCUPATIONAL EXPERIENCE PROGRAM
UNIT VI

INFORMATION SHEET

I. Types of supervised occupational experience programs

A. Supervised farming and/or ranching program

1. Have production projects
2. Have production occupational objective
3. Should include production and betterment projects

B. Off-farm agricultural occupations (OFAO)

1. Have non-production occupational objective
2. Have on the job training programs

C. Agricultural occupation training under the laboratory situation

1. Have either production or non-production occupational objective
2. Facilities provided by school

Examples: School farm, greenhouse, shop, or other facilities

D. Farm and/or ranch placement

1. Production or non-production objective
2. Placed in a real life situation for certain length of time for training.

E. Agricultural experience exploratory program

1. Have short term learning experience objective
2. Should become familiar with one or more agricultural occupations

II. Supplementary agricultural skills and betterment projects

A. Betterment projects--An undertaking which involves a series of jobs designed to improve the appearance and real estate value of the farm, ranch, and/or business and/or the efficiency of the agricultural business as a whole and which contributed to the comfort and conveniences of all concerned.

Examples: Home improvement, farm library, beef improvement, or other projects

B. Supplementary agricultural skills--An agricultural job for additional experience, skill and/or efficiency not included in the jobs in the student's supervised occupational experience program or betterment project.

INFORMATION SHEET

Examples: Welding panels, marketing cattle, retailing, or other skills

III. Reasons for having a program

- A. Learn responsibility
- B. Gain experience
- C. Earn money
- D. Develop management abilities
- E. Prepare for a career
- F. Learn record keeping
- G. Learn new skills
- H. Establishment in an agricultural occupation

IV. Sources of programs

- A. Other students in chapter
- B. Farmers, ranchers, and/or agricultural businessmen
- C. Agricultural sales and/or service
- D. Chapter chain program
- E. Nebraska Agricultural Improvement Associations

V. Preparation for the program

- A. Place for the program
- B. Necessary equipment
- C. Parent, student, teacher conference
- D. Supplies
- E. Financing
  - 1. Student

INFORMATION SHEET

2. Parents
3. Banks
4. Agricultural credit agencies

VI. Requirements for state farmer and/or state agribusinessman degree

  A. Active member of FFA for two years
  B. Two years of instruction in Vocational Agriculture
  C. Pass an FFA test (grade of 70 or higher)
  D. Juniors, seniors, or out-of-school FFA members eligible
  E. Outstanding supervised agricultural occupational experience program
  F. Chapter Farmer for one year
  G. Proficiency in parliamentary procedure
  H. Ability to give a five minute speech
  I. Evidence of leadership and cooperation
  J. Earnings and investments of $500 or more from supervised training program and/or have worked at least 600 hours in the case of directed laboratory experience program
  K. Satisfactory scholastic record
  L. Application mailed by February 1st
  M. Participate in five competitive activities above chapter level

  (NOTE: Refer to State Constitiution.)

VII. Records students should keep

  A. Supervised experience program agreement
  B. Program budget(s) (Transparencies 1, 2, 3, 4, 5, 6, 7, 8)
  C. Production goals and accomplishments
  D. Supervised experience program plan
  E. Supervised experience program diary
  F. Support records

  Examples: Weight, breeding

INFORMATION SHEET

G. Expense record (Transparency 12)

H. Income record (Transparencies 10 and 11)

I. Unpaid labor record

J. Record of work experience and wages received

K. Depreciation schedule

L. Inventory and additional investments (Transparency 9)

M. Financial summary (Transparency 13)

N. Total earnings

O. Net worth statement

(NOTE: Refer to *Nebraska Vocational Agriculture Supervised Experience Program Record Book.*)

VIII. Completing supervised experience program record book

A. Supervised experience program plan

1. Tells just what you intend to do
2. Is written in terms of "I will"
3. Is written after careful study
4. Is written before the task is done
5. Is written in paragraph or outline form
6. Is in seasonal order
7. Should be approved by your parents and your teacher
8. Is gramatically correct and neatly written

B. Expense record

1. Identify each item

   Example: 50cc blackleg serum for calves, $5.00

2. Types

   a. Feed cost

INFORMATION SHEET

        b. Labor and machinery costs

        c. Other costs

    3. Procedures for showing expenses

        a. List date

        b. List items

        c. Charge to total cost column

        d. Charge to correct expense

    4. Forward columns to next page when first page is completed

    (NOTE: When feeding Dad's feed, show this as an expense. You may offset this by showing labor for Dad on farming income other than supervised program.)

C. Income record

    1. List date

    2. Identify each item Examples:

    Example: 300 bu corn at $1.25/bu; 3 fat hogs, 600 lbs. at $.23/lb.

    3. Credit the total income column

    4. Credit the specific enterprise with the value

    5. List products used at home

        a. Credit to the enterprise

        b. Use market value and mark "used"

    6. Credit to the enterprise under other income

        a. Prize money

        b. Bonuses

    7. Forward columns to next page when first page is completed

D. Student's unpaid labor record

    1. Record chores by calendar month

INFORMATION SHEET

a. List date

b. List in "kind" column

c. List total hours of student time for month

d. List other unpaid labor

2. Record other labor procedures or chores

3. List hired labor and machinery on expense page

E. Beginning inventory

1. Make once a year, January 1

2. Value animals according to market value

3. Label enterprise columns with name of enterprise

Examples: Beef, swine, or poultry

4. Short year for beginning students (July 1-December 31)

F. Closing inventory

1. Make once a year, December 31

2. Will be beginning inventory for next year

G. Financial summary

1. Enterprise involvement

2. List total closing inventory (page 31, record book)

3. List products sold or used (page 25, record book)

4. List other income (page 25, record book)

5. Figure total income

6. List total beginning inventory and additional investment (page 31, record book)

7. List feed costs (pages 18-23, record book)

8. List labor and machinery costs (pages 18-23, record book)

9. List other costs (pages 18-23, record book)

10. Figure total expenses

INFORMATION SHEET

11. Labor income (total income minus total expenses)
12. Figure student labor income (student's share)
13. Figure total student labor income (total from all enterprises)
14. Figure total unpaid labor (pages 26-27)
15. Figure student labor income per hour
16. List total production

H. Student's net worth statement

1. Make inventory
2. Enter accounts receivable
3. Enter cash on hand
4. List checking and savings accounts
5. List other investments such as bonds, cash, and value of life insurance
6. List all items of personal nature

   (NOTE: Do not include clothing.)
7. List unpaid bills and liens of business and personal nature
8. List accounts payable
9. Figure net worth or the difference between total assets and liabilities

NOTE TO INSTRUCTOR

The new Nebraska Vocational Agriculture Farming Program Practice Record is being revised at the time of this printing. When available, insert a copy here to be used for transparencey masters and as a student worksheet section.

Budget Worksheet for Livestock Enterprise

EXTIMATED INCOME

CLOSING INVENTORY

A. ANIMALS ______ LBS. X EST. PRICE $ ______ = $ ______ (A)
B. ANIMALS ______ LBX. X EST. PRICE $ ______ = $ ______ (B)
C. EQUIP. OWNED $ ______ – 1 YR. USE $ ______ = $ ______ (C)
TOTAL: A + B + C = $ ______

PRODUCTS SOLD ______ LBS. X EST. PRICE $ ______ = $ ______
PRODUCTS USED ______ LBS. X EST. PRICE $ ______ = $ ______

OTHER INCOME

A. MANURE SOLD = $ ______ (A)
B. FAIR OR SHOW PREMIUMS = $ ______ (B)
C. BREEDING FEES = $ ______ (C)
D. OTHER ______________________ = $ ______ (D)
TOTAL: A + B + C + D = $ ______

ESTIMATED INCOME $ ______

TM 1

Budget Worksheet for Livestock Enterprise, cont.

ESTIMATED EXPENSES

BEGINNING INVENTORY

A. ANIMALS ______ LBS. X EST. PRICE $ ______ = $ ______ (A)
B. ANIMALS ______ LBS. X EST. PRICE $ ______ = $ ______ (B)
C. EQUIPMENT OWNED ______ = $ ______ (C)
TOTAL: A + B + C = $ ______

ADDITIONAL INVESTMENTS

A. ANIMALS ______ LBS. X EST. PRICE $ ______ = $ ______ (A)
B. EQUIPMENT PURCHASED ______ = $ ______ (B)
TOTAL: A + B = $ ______

FEED

GRAIN ______ LBS. X PRICE $ ______ = $ ______
SUPPLEMENT ______ LBS. X PRICE $ ______ = $ ______
ROUGHAGE ______ LBS. X PRICE $ ______ = $ ______
BIT. & MIN. ______ LBS. X PRICE $ ______ = $ ______

LABOR

MAN HRS. HIRED ______ HRS. X WAGE $ ______ = $ ______
MACHINE HRS. HIRED ______ HRS. X RATE $ ______ = $ ______

TM 2

REPAIRS & MAINTENANCE

HOUSING $ ______ + EQUIPMENT $ ______ = $ ______

Budget Worksheet for Livestock Enterprise, cont.

VETERINARY & MEDICINE

A. HEAD __________ X COST PER SHOT $ _______ = $ _______ (A)

B. HEAD __________ X COST PER HEAD $ _______ = $ _______ (B)

TOTAL: A + B = $ __________

STORAGE OF FEED _________ BU. X RATE $ ______ X TIME ____ = $ __________

INTEREST

A. STUDENT'S MONEY $______ X ANNUAL LOCAL RATE

_____ % X TIME ___________ /12 MONTHS = $ _______ (A)

B. BORROWED MONEY $ _____ X ANNUAL LOAN RATE

_____ % X TIME ___________ /12 MONTHS = $ _______ (B)

TOTAL: A + B = $ __________

CASH RENT

A. RENT/MONTH $ __________ X _______ MONTHS = $ _______ (A)

B. PASTURE/ANIMAL MONTH _____ X _____ AUM = $ _______ (B)

TOTAL: A + B = $ __________

SELLING COSTS = $ __________

BREEDING FEES = $ __________

OTHER EXPENSES ________________________________ = $ __________

ESTIMATED TOTAL EXPENSES $ __________

Budget Worksheet for Livestock Enterprise, cont.

STUDENT LABOR INCOME

ESTIMATED STUDENT LABOR INCOME

ESTIMATED TOTAL INCOME $ ______ MINUS ESTIMATED TOTAL EXPENSES $ ________ = ESTIMATED STUDENT LABOR INCOME $ __________

ESTIMATED STUDENT LABOR INCOME PER HOUR

ESTIMATED STUDENT LABOR INCOME $ ________ DIVIDED BY ESTIMATED HOURS UNPAID LABOR ________ HOURS = ESTIMATED STUDENT LABOR INCOME PER HOUR $ __________

TM 4

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Budget Worksheet for Crop Enterprise

ESTIMATED INCOME

A. GRAIN __________ BU. X EST. PRICE $ ______ = $ ______ (A)

B. EQUIP. OWNED $ ______ – 1 YR. USE $ ______ = $ ______ (B)

TOTAL: A + B = $ __________

PRODUCTS SOLD ______ BU. X EST. PRICE $ ______ = $ __________

PRODUCTS USED ______ BU. X EST. PRICE $ ______ = $ __________

OTHER INCOME

A. PASTURE RENT = $ ______ (A)

B. FAIR OR SHOW PREMIUMS = $ ______ (B)

C. OTHER ______________________________ = $ ______ (C)

TOTAL: A + B + C = $ __________

ESTIMATED TOTAL INCOME $ __________

TM 5

Budget Worksheet for Crop Enterprise, cont

ESTIMATED EXPENSES

BEGINNING INVENTORY

A. GRAIN ________ BU. X EST. PRICE $ ______ = $ ______ (A)

B. EQUIPMENT OWNED ______________________ = $ ______ (B)

TOTAL: A + B = $ ________

ADDITIONAL INVESTMENTS ______________________ = $ ________

SEED ____________ BU. X PRICE $ ______ = $ ________

MACHINERY (EXCLUDING STUDENT LABOR)

TILLAGE ______ ACRES X COST $ ______ = $ ________

TILLAGE ______ ACRES X COST $ ______ = $ ________

SEEDING ______ ACRES X COST $ ______ = $ ________

WEEDING ______ ACRES X COST $ ______ = $ ________

SPRAYING ______ ACRES X COST $ ______ = $ ________

HARVESTING ______ ACRES X COST $ ______ = $ ________

HAULING ______ BU. X RATE $ ______ = $ ________

PROCESSING ______ BU. X RATE $ ______ = $ ________

STORAGE ______ BU. X RATE $ ______ X TIME ______ = $ ________

TM 6

Budget Worksheet for Crop Enterprise, cont.

RENT

A. CASH: __________ ACRES X RENT $ ______ = $ ______ (A)

B. SHARE: __________ BU. X PRICE $ __________ X

__________ % LANDLORD'S SHARE = $ ______ (B)

TOTAL: A + B = $ __________

FERTILIZER __________ ACRES X COST $ ______ = $ __________

INSECTICIDES ________ ACRES X COST $ ______ = $ __________

INTEREST

A. STUDENT'S MONEY $ ______ X ANNUAL LOCAL

RATE ________ % X TIME ______ /12 MONTHS = $ ______ (A)

B. BORROWED MONEY $ ______ X ANNUAL LOAN

RATE ________ % X TIME ______ /12 MONTHS = $ ______ (B)

TOTAL: A + B = $ __________

OTHER EXPENSES

A. IRRIGATION = $ ______ (A)

B. HIRED LABOR _____ HRS. X WAGE $ ______ = $ ______ (B)

C. INSURANCE = $ ______ (C)

D. SOIL TESTS = $ ______ (D)

TOTAL: A + B + C + D = $ __________

ESTIMATED TOTAL EXPENSES $ __________

TM 7

Budget Worksheet for Crop Enterprise, cont

STUDENT LABOR INCOME

ESTIMATED STUDENT LABOR INCOME

ESTIMATED TOTAL INCOME $ __________ MINUS ESTIMATED TOTAL EXPENSES $ ________ = ESTIMATED STUDENT LABOR INCOME $ ___________

ESTIMATED STUDENT LABOR INCOME PER HOUR

ESTIMATED STUDENT LABOR INCOME $ __________ DIVIDED BY ESTIMATED HOURS UNPAID LABOR ______ HOURS = ESTIMATED STUDENT LABOR INCOME PER HOUR $ _______________

TM 8

C-151-A

INVENTORY AND ADDITIONAL INVESTMENTS

1. Enterprise ______________ **Date Started** ______________ **Date Closed** ______________

DATE	LIVESTOCK, GRAIN, EQUIPMENT	QUANTITY	BEGINNING VALUE	QUANTITY	CLOSING VALUE (If not sold)
			$		$
	Total Beginning Inventory & Add. Investments		$	Total Closing Inventory	$

2. Enterprise ______________ **Date Started** ______________ **Date Closed** ______________

DATE	LIVESTOCK, GRAIN, EQUIPMENT	QUANTITY	BEGINNING VALUE	QUANTITY	CLOSING VALUE (If not sold)
			$		$
	Total Beginning Inventory & Add. Investments		$	Total Closing Inventory	$

3. Enterprise ______________ **Date Started** ______________ **Date Closed** ______________

DATE	LIVESTOCK, GRAIN, EQUIPMENT	QUANTITY	BEGINNING VALUE	QUANTITY	CLOSING VALUE (If not sold)
			$		$
	Total Beginning Inventory & Add. Investments		$	Total Closing Inventory	$

4. Enterprise ______________ **Date Started** ______________ **Date Closed** ______________

DATE	LIVESTOCK, GRAIN, EQUIPMENT	QUANTITY	BEGINNING VALUE	QUANTITY	CLOSING VALUE (If not sold)
			$		$
	Total Beginning Inventory & Add. Investments		$	Total Closing Inventory	$
	GRAND TOTALS		$		$

(Carry Enterprise Totals to Financial Summary Page)

C-153-A

INCOME RECORD

DATE	ITEM	QUALTITY	PRICE	TOTAL INCOME
	Specify and describe briefly		Per cwt., bus., etc.	List all items here
			$	$
	TOTALS		$	$

(Carry Enterprise Totals to Financial Summary Page)

C-155-A

INCOME RECORD

1. ______ (Enterprise)		2. ______ (Enterprise)		3. ______ (Enterprise)		4. ______ (Enterprise)	
PRODUCT SOLD or USED	**OTHER INCOME**	**PRODUCT SOLD or USED**	**OTHER INCOME**	**PRODUCT SOLD or USED**	**OTHER INCOME**	**PRODUCT SOLD or USED**	**OTHER INCOME**
Livestock sales; Produce used; Produce sold; (Incl. landlord's share of crops)	Premiums Manure Straw etc.	Livestock sales; Produce used; Produce sold; (Incl. landlord's share of crops)	Premiums Manure Straw etc.	Livestock sales; Produce used; Produce sold; (Incl. landlord's share of crops)	Premiums Manure Straw etc.	Livestock sales; Produce used; Produce sold; (Incl. landlord's share of crops)	Premiums Manure Straw etc.
$	$	$	$	$	$	$	$
$	$	$	$	$	$	$	$

C-157-A

EXPENSE RECORD

Enter purchase of livestock and permanent equipment on Inventory and Additional Investments page.

				1. ________ (Enterprise)		
DATE	ITEM	QUANTITY	TOTAL COST	FEED COST	LABOR & MACHINERY COST	OTHER COSTS
	Specify and Describe Briefly		List all Items here	Grain Hay Supplement Grinding	Paid Labor; Tractor Hire; Machinery Hire;	Cash rent; Seeds; Share rent; Interest; Insurance; Supplies
			$	$	$	$
	TOTALS		$	$	$	$

(Carry Enterprise Totals to Financial Summary Page)

TM 12

C-159-A

FINANCIAL SUMMARY

(Use pencil until approved)

1. Enterprise ____________________

INCOME		EXPENSES	
Total Closing Inventory	$	Total Beginning Inventory & Add. Invest.	$
Products Sold or Used		Feed Costs	
Other Income		Labor & Machinery Costs	
		Other Costs	
Total Income		Total Expenses	
Labor Income (Total Income Minus Expenses)			
Student Labor Income (Student's Share)			$

2. Enterprise ____________________

INCOME		EXPENSES	
Total Closing Inventory	$	Total Beginning Inventory & Add. Invest.	$
Products Sold or Used		Feed Costs	
Other Income		Labor & Machinery Costs	
		Other Costs	
Total Income		Total Expenses	
Labor Income (Total Income Minus Expenses)			
Student Labor Income (Student's Share)			$

3. Enterprise ____________________

INCOME		EXPENSES	
Total Closing Inventory	$	Total Beginning Inventory & Add. Invest.	$
Products Sold or Used		Feed Costs	
Other Income		Labor & Machinery Costs	
		Other Costs	
Total Income		Total Expenses	
Labor Income (Total Income Minus Expenses)			
Student Labor Income (Student's Share)			$

4. Enterprise ____________________

INCOME		EXPENSES	
Total Closing Inventory	$	Total Beginning Inventory & Add. Invest.	$
Products Sold or Used		Feed Costs	
Other Income		Labor & Machinery Costs	
		Other Costs	
Total Income		Total Expenses	
Labor Income (Total Income Minus Expenses)			
Student Labor Income (Student's Share)			$

Unpaid Labor			
Student Labor — hrs.	______	Total Student Labor Income (1, 2, 3, 4)	$ ______
Other Unpaid Labor — hrs.	______	Student Labor Income Per Hour (Labor Income ÷ No. Hrs. Unpaid Labor)	$ ______
Total Hours Unpaid Labor	______		

Total yield, pounds, dozen, bushels, etc.: ____________________

The records of this farming program, including calculation of the items listed above, have been checked by me and are approved correct.

Date: ____________________ Signed: ____________________ (Instructor)

PLANNING AND IMPLEMENTING THE SUPERVISED OCCUPATIONAL EXPERIENCE PROGRAM
UNIT VI

TEST

1. Describe the five types of supervised occupational experience programs.

   a.

   b.

   c.

   d.

   e.

2. Distinguish between a supplementary agricultural skill and a betterment project by placing an "X" by the betterment projects and an "O" by the supplementary agricultural skills listed below.

   ___ a. Home improvement

   ___ b. Fixed corral

   ___ c. Swine improvement

   ___ d. Load cattle in truck

   ___ e. Farm library

   ___ f. Hauled cattle to market

   ___ g. Beef improvement

   ___ h. Groomed beef cattle

   ___ i. Pasture improvement

   ___ j. Built ¼ mile fence

3. List five reasons for having a supervised occupational experience program.

   a.

   b.

c.

d.

e.

4. List three sources of securing agricultural experience programs.

a.

b.

c.

5. Discuss the preparation necessary before securing an agricultural experience program.

6. Select from a list the requirements for state farmer and/or state agriculturalist by placing an "X" in the blank provided.

___ a. Active member of FFA for two years

___ b. Earn $95 from project program

___ c. Two years of instruction in Vocational Agriculture

___ d. Greenhand for two years

___ e. A junior or senior in school or out-of-school FFA member

___ f. Lead a group discussion for one hour

___ g. Submit official FFA scrapbook

___ h. Have three letters of recommendation

7. Select from a list the records that should be kept in the students' record books by circling the correct letters.

a. Support records

b. Inventory and additional investments

c. Savings account

d. Expense record

e. Income record

f. Bank checking account

g. Series "E" bonds

8. Demonstrate the ability to:

a. Complete a sample problem in the record book.

b. Complete all pages in your own record book that pertains to your project.

(NOTE: This should be done to the satisfaction of the instructor.)

PLANNING AND IMPLEMENTING THE SUPERVISED OCCUPATIONAL EXPERIENCE PROGRAM
UNIT VI

ANSWERS TO TEST

1. Description should include:
    a. Supervised farming and/or ranching program
        1. Have production projects
        2. Have production occupational objective
        3. Should include production and improvement projects
    b. Off-farm Agricultural Occupations (OFAO)
        1. Have non-productive occupational objective
        2. Have on-the-job training programs
    c. Agricultural occupation training under the laboratory situation
        1. Have either production or non-production occupational objective
        2. Facilities provided by school
    d. Farm and/or ranch placement
        1. Production or non-production objective
        2. Placed in a real life situation for certain length of time for training
    e. Agricultural experience exploratory program
        1. Short term learning experience
        2. Become familiar with one or more agricultural occupations
2. a. X
    b. O
    c. X
    d. O
    e. X
    f. O
    g. X
    h. O

   i. X
   j. O
3. Any five of the following
   a. Learn responsibility
   b. Gain experience
   c. Earn money
   d. Develop management abilities
   e. Prepare for a career
   f. Learn record keeping
   g. Learn new skills
   h. Establishment in an agricultural occupation
4. Any three of the following
   a. Other students in chapter
   b. Farmers, ranchers, and/or agricultural businessman
   c. Agricultural sales and/or service
   d. Chapter chain program
   e. Nebraska Agricultural Improvement Associations
5. Discussion should include:
   a. Place for program
   b. Necessary equipment
   c. Parent, student, teacher conference
   d. Supplies
   e. Financing
6. a, c, e
7. a, b, d, e
8. Performance skills will be evaluated to the satisfaction of the instructor.

CAREER OPPORTUNITIES IN AGRICULTURAL SALES AND SERVICE
UNIT VII

UNIT OBJECTIVE

After completion of this unit, the student should be able to describe the career opportunities in agricultural sales and service. The student should also be able to develop advertisement and calculate sales tax and total cost. This knowledge will be evidenced by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with sales and service to the correct definitions.
2. List three interests of employees in agricultural sales and service.
3. List statements concerning the purpose of advertising.
4. Describe three careers in agricultural sales and service.
5. Develop an advertisement for an agricultural product.
6. Calculate sales tax and total cost.

CAREER OPPORTUNITIES IN AGRICULTURAL SALES AND SERVICE
UNIT VII

SUGGESTED ACTIVITIES

I. Instructor:

  A. Provide students with objective sheet.

  B. Provide students with information and assignment sheets.

  C. Make transparency.

  D. Discuss unit and specific objectives.

  E. Discuss information and assignment sheets.

  F. Have students complete assignment sheets.

  G. Give test.

II. Student:

  A. Read objectives.

  B. Study information sheet.

  C. Complete assignment sheets.

  D. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

  A. Objective sheet

  B. Information sheet

  C. Transparency master: TM1—Agricultural Sales Clerk

  D. Assignment sheets

    1. Assignment Sheet #1—Develop An Advertisement

    2. Assignment Sheet #2—Calculate Sales Tax and Total Cost

  E. Test

  F. Answers to test

II. References:

A. Curt, Samuel M., and Mercer, Robert J. *Exploring Occupations In Agribusiness and Natural Resources.* New York, New York, McGraw Hill Book Company, 1976.

B. Bardette, Clarence: *Exploring Agribusiness and Natural Resources.* Bureau of Vocational, Technical, and Adult Education, New York, New York; McGraw Hill Book Co., 1979.

C. Hoover, Norman K. *Handbook of Agricultural Occupations.* Danville, Illinois: The Interstate Printers and Publishers, Inc., 1964.

CAREER OPPORTUNITIES
IN AGRICULTURAL SALES AND SERVICE
UNIT VII

INFORMATION SHEET

I. Terms and definitions

   A. Headline—Attracts readers' attention and makes them want to read more; Contains not more than five or six words

   B. Illustration—Shows product's special features and how product works

   C. Copy—States product's benefits and specifications, creating desire to own the product

   D. Layout—Arrangement of type, size of type, and illustration that is pleasing to the eye

   E. Signature plate—Distinctive typeface trademark; emblem or symbol which identifies the store with customers; includes stores address, business hours, slogan, and phone numbers

   F. Micrometer—Instrument used to measure thickness of objects in small units of measurement

II. Interests of employees in agriculture sales and service

   A. Farm and ranch

   B. Friendly, pleasant employees willing to serve public

   C. Management ability

III. Purposes of advertising

   A. Attract attention of potential buyer

   B. Stimulate interest in the prospective customer

   C. Create a desire for the product

   D. Motivate buying activities

INFORMATION SHEET

IV. Careers in agricultural sales and service

  A. Agricultural supplies salesperson

    1. Nature of work

      a. Type of work

        1. Calls on prospective buyers

        2. Takes orders

        3. Completes sales arrangement

        4. Installs equipment

      b. Works within an assigned district

      c. Responsible for displays at shows, fairs, and exhibits

    2. Working conditions

      a. Considerable travel

      b. Irregular hours

      c. Meeting with company representatives

    3. Education

      a. High school education

      b. High school courses should include english, bookkeeping, and business education

  B. Agricultural supplies service mechanic
    1. Nature of the work

      a. Repairs all kinds of agricultural equipment and machinery

      b. Highly specialized work

      c. Uses wrenches, levers, hammers, gauges, and micrometers
    2. Working conditions

      a. Tasks are learned on the job

      b. Variety of working conditions

      c. Working hours vary week to week

INFORMATION SHEET

3. Education
    a. High school education
    b. High school courses should include mathematics, drafting, physics, and small engines

C. Agricultural supplies store employee

1. Nature of work
    a. Varies with supplies and service of business
    b. Unloads freight cars and trucks and fills orders
2. Working conditions
    a. Indoor work
    b. Work in dusty conditions
    c. Work hours are regular; employment steady
3. Education
    a. High school courses should include vocational agriculture and business education
    b. Farm work experience
    c. General college education needed for manager's position

D. Feed mill equipment operator

1. Nature of work
    a. Works with and maintains equipment
    b. Balances ration
    c. Supervises work of feed mill helper
    d. Sells and orders feed
2. Working conditions
    a. Noisy, dusty

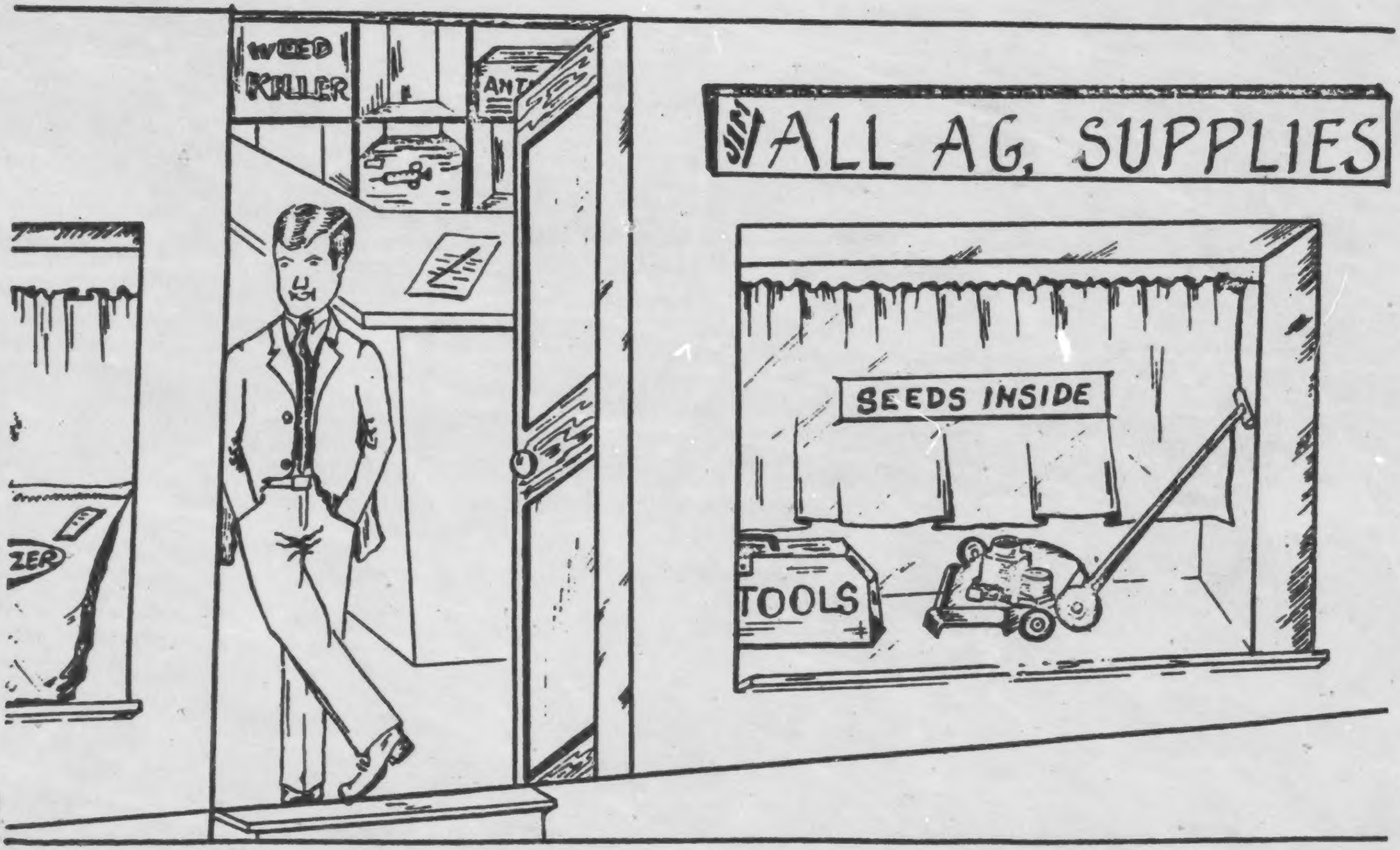
INFORMATION SHEET

    - b. Indoors
    - c. Regular hours and steady employment
  - 3. Education
    - 1. No specific education required
    - 2. High school courses in business recommended
    - 3. Knowledge in balancing ration
    - 4. Advancement by taking agriculture short courses

E. Truck driver for feed mill

  - 1. Nature of work
    - a. Delivers feed and supplies
    - b. Unloads feed trucks
    - c. Most time spent loading
    - d. Driving and unloading
    - e. Serves as clerk during slack periods
  - 2. Work conditions
    - a. Both outdoors and indoors
    - b. All kinds of weather
    - c. Dusty
  - 3. Education
    - a. High school education
    - b. High school course in business
    - c. Enjoy working with people
    - d. Able to lift heavy items

AGRICULTURAL SALES CLERK


WEED KILLER
ANT
ALL AG. SUPPLIES
SEEDS INSIDE
TOOLS
ZER
TM 1

C-175-A

CAREER OPPORTUNITIES
IN AGRICULTURAL SALES AND SERVICE
UNIT VII

ASSIGNMENT SHEET #1—DEVELOP AN ADVERTISEMENT

1. In the fall of the year, you find that Ag Town Farm and Garden Supply has quite a number of power lawn mowers still on hand. To keep them over until next spring will cause storage problems, to say nothing of the money you'll have tied up in them through the winter. As owner of the business, you decide that the best thing to do is to reduce prices by 20% and try to get people to buy them now rather than wait until next spring. With the given information develop an advertisement for the lawn mowers. Write the ad in the space provided below.

2. Ag Town Farm and Garden Supply has taken on a new line of weedkiller for corn called "Kill'em." It will cost $2 to $3 less per acre than your competition's product. Kill'em destroys broadleaf and grassy weeds without harming corn. It comes in easy-to-apply granular form and poses no threat to next year's crop as it is completely biodegradable. Ag Town Farm and Garden Supply is the only place in town where Kill'em is available. With the given information develop an advertisement for the new weed killer. Write the ad in the space provided below.

CAREER OPPORTUNITIES
IN AGRICULTURAL SALES AND SERVICE
UNIT VII

ASSIGNMENT SHEET #2—CALCULATE SALES TAX AND TOTAL COST

Calculate sales taxes and total cost for the problems below. Show your work.

1. 1 claw hammer, $7.65
2. 10 lb. 16 d nails, $.15 per pound; 2 gallons housepaint, $9.00 per gallon
3. 200 lb. 5-10-5 lawn fertilizer, $7.00 per hundred lb.; 12 lb. mix grass seed $2.00 per pound.
4. 3 evergreen trees, $12.75 each

AMOUNT OF SALE	TAX	AMOUNT OF SALE	TAX	AMOUNT OF SALE	TAX
$ .01 TO $ .05	NONE	$ 7.01 TO $ 7.35	$ .22	$14.36 TO $14.70	$ .44
.06 TO .35	$ .01	7.36 TO 7.70	.23	14.71 TO 15.00	.45
.36 TO .70	.02	7.71 TO 8.00	.24	15.01 TO 15.35	.46
.71 TO 1.00	.03	8.01 TO 8.35	.25	15.36 TO 15.70	.47
1.01 TO 1.35	.04	8.36 TO 8.70	.26	15.71 TO 16.00	.48
1.36 TO 1.70	.05	8.71 TO 9.00	.27	16.01 TO 16.35	.49
1.71 TO 2.00	.06	9.01 TO 9.35	.28	16.36 TO 16.70	.50
2.01 TO 2.35	.07	9.36 TO 9.70	.29	16.71 TO 17.00	.51
2.36 TO 2.70	.08	9.71 TO 10.00	.30	17.01 TO 17.35	.52
2.71 TO 3.00	.09	10.01 TO 10.35	.31	17.36 TO 17.70	.53
3.01 TO 3.35	.10	10.36 TO 10.70	.32	17.71 TO 18.00	.54
3.36 TO 3.70	.11	10.71 TO 11.00	.33	18.01 TO 18.35	.55
3.71 TO 4.00	.12	11.01 TO 11.35	.34	18.36 TO 18.70	.56
4.01 TO 4.35	.13	11.36 TO 11.70	.35	18.71 TO 19.00	.57
4.36 TO 4.70	.14	11.71 TO 12.00	.36	19.01 TO 19.35	.58
4.71 TO 5.00	.15	12.01 TO 12.35	.37	19.36 TO 19.70	.59
5.01 TO 5.35	.16	12.36 TO 12.70	.38	19.71 TO 20.00	.60
5.36 TO 5.70	.17	12.71 TO 13.00	.39	20.01 TO 20.35	.61
5.71 TO 6.00	.18	13.01 TO 13.35	.40	20.36 TO 20.70	.62
6.01 TO 6.35	.19	13.36 TO 13.70	.41	20.71 TO 21.00	.63
6.36 TO 6.70	.20	13.71 TO 14.00	.42	21.01 TO 21.35	.64
6.71 TO 7.00	.21	14.01 TO 14.35	.43	21.36 TO 21.70	.65

CAREER OPPORTUNITIES
IN AGRICULTURE SALES AND SERVICE
UNIT VII

ANSWERS TO ASSIGNMENT SHEET

Assignment sheet #2

1. $7.65 hammer
   .23 sales tax (from chart)
   $7.88 Total

2. 10 lb. x $ .15 = $ 1.50
   2 gal. x $9.00 = 18.50
   .59 sales tax (from chart)
   $20.09

3. 200 lb. x $7.00/cwt = $14.00
   12 lb. x $2.00/lb = 24.00
   38.00
   1.14 Sales tax ($38.00 x .03)
   $39.14 Total

4. 3 trees x 12.75 each = $38.25
   1.16*
   $34.41

*(38 x .03)	$1.14
Tax chart .06 to .35	.02
Total Sales Tax	$1.16

(NOTE: Three percent sales tax rate may be used to compute sales tax in items costing up to $21.70. On items costing more, multiply the dollar amount times three and add amount shown in the chart for the remainder.)

CAREER OPPORTUNITIES
IN AGRICULTURAL SALES AND SERVICE
UNIT VII

TEST

1. Match the terms on the right with the correct definitions.

____ a. Shows product's special features and how product works

____ b. Attracts readers' attention and makes them want to read more; contains not more than five or six words

____ c. Distinctive typeface trademark; emblem or symbol which identifies the store with customers; includes store's address, business-hours,slogan, and phone number

____ d. Arrangement of type, size of type, and illustration that is pleasing to the eye

____ e. States product's benefits and specifications, creating desire to own product

____ f. Instrument used to measure thickness of objects in small units of measurement

1. Headline
2. Illustration
3. Micrometer
4. Copy
5. Layout
6. Signature plate

2. List three interest of employees of agriculture sales and service.

a.

b.

c.

3. List the purposes of advertising.

a.

b.

c.

d.

4. Describe three careers in agricultural sales and service.
   a. Agricultural supplies salesperson
      1) Nature of work

      2) Working conditions

      3) Education

   b. Agricultural supplies store employee
      1) Nature of work

2) Working conditions

3) Education

c. Truck driver for feed mill

1) Nature of work

2) Working conditions

3) Education

5. Develop an advertisement for an agricultural product.

6. Calculate sales tax and total cost.

   (NOTE: If activities 5 and 6 have not been completed prior to the test, ask your instructor when they should be done.)

CAREER OPPORTUNITIES
IN AGRICULTURAL SALES AND SERVICE
UNIT VII

ANSWERS TO TEST

1. a. 2
   - b. 1
   - c. 6
   - d. 5
   - e. 4
   - f. 3
2. a. Farm and ranch
   - b. Friendly, pleasant employees willing to serve public
   - c. Management ability
3. a. Attract attention of potential buyer
   - b. Stimulate interest in the prospective customer
   - c. Create a desire for the product
   - d. Motivate buying activities
4. Description should include:
   - a. Agricultural supplies salesperson
     - a) Type of work
       - 1) Calls on prospective buyer
       - 2) Takes orders
       - 3) Completes sales arrangements
       - 4) Installs equipment
     - b) Works within an assigned district
     - c) Responsible for displays at shows, fairs, and exhibits

- 2) Working conditions
  - a) Considerable travel
  - b) Irregular hours
  - c) Meeting with company representatives
- 3) Education
  - a) High school education
  - b) High school courses should include english, bookkeeping, and business education

b. Agricultural supplies store employee

- 1) Nature of work
  - a) Varies with supplies and service of business
  - b) Unloads freight cars and trucks and fills orders
- 2) Working conditions
  - a) Indoor work
  - b) Work in dusty conditions
  - c) Work hours are regular; employment steady
- 3) Education
  - a) High school courses should include vocational agriculture and business education
  - b) Farm work experience
  - c) General college education needed for manager's position

c. Truck driver for feed mill

- 1) Nature of work
  - a) Delivers feed and supplies
  - b) Unloads feed trucks
  - c) Most time spent loading
  - d) Driving and unloading
  - e) Serves as clerk during slack periods

2) Working conditions
    a) Both outdoors and indoors
    b) All kinds of weather
    c) Dusty
3) Education
    a) High school education
    b) High school course in business
    c) Enjoy working with people
    d) Able to lift heavy items

5. Evaluated to satisfaction of instructor.
6. Evaluated to satisfaction of instructor.

CAREER OPPORTUNITIES
IN HORTICULTURE
UNIT VIII

UNIT OBJECTIVE

After completion of this unit, the student should be able to describe careers in horticulture and list basic entry skills for careers in horticulture. The student should also be able to make a flower arrangement, transplant a plant and prune a tree. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match term associated with careers in horticulture to the correct definitions.
2. Name the three basic entry skills for careers in horticulture.
3. Describe three specific horticulture careers.
4. Demonstrate the ability to:
   a. Make a flower arrangement.
   b. Transplant a plant.
   c. Prune a tree.

CAREER OPPORTUNITIES IN HORTICULTURE
UNIT VIII
SUGGESTED ACTIVITIES

I. Instructor:

   A. Provide students with objective test.

   B. Provide students with information and job sheets.

   C. Make transparencies.

   D. Discuss unit and specific objectives.

   E. Discuss information sheet.

   F. Demonstrate and discuss procedures outlined in job sheets.

   G. Give test.

II. Students:

   A. Read objective sheet.

   B. Study information sheet.

   C. Demonstrate the ability to accomplish the procedures outlined in the job sheets.

   D. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

   A. Objective sheet

   B. Information sheet

   C. Transparency masters

      1. TM 1—Ornamental Horticulture Occupational Areas

      2. TM 2—Groundskeeper

      3. TM 3—Nursery Employee

   D. Job sheets

      1. Job Sheet #1—Make a Flower Arrangement

      2. Job Sheet #2—Transplant a Plant

3. Job Sheet #3—Prune a Tree

E. Test

F. Answers to test

II. References:

A. Curtis, Samuel M., and Mercer, Robert J. *Exploring Occupations in Agribusiness and Natural Resources.* New York, New York: Gregg Division, McGraw Hill, 1976.

B. Hoover, Norman K. *Handbook of Agricultural Occupations.* Danville, Illinois: The Interstate Printers and Publishers, Inc., 1964.

C. *Pruning Ornamental Trees and Shrubs,* Bulletin #165, U.S.D.A.

CAREER OPPORTUNITIES IN HORTICULTURE
UNIT VIII

INFORMATION SHEET

I. Terms and definitions

   A. Wholesale nurseryman—Produces ornamental landscape plant materials

   B. Garden center operator—Responsible for retail sales of ornamental landscape plant materials and supplies

   C. Landscape contractor—Implements landscape plans

   D. Landscape gardener—Responsible for maintenance of landscaped areas

   E. Pesticide applicator—Specializes in area of grounds maintenance dealing with control of pests

   F. Landscape designer—Responsible for creation of plans and specifications for landscape projects

   G. Golf course superintendent—Specializes in area of grounds maintenance dealing specifically with turf grass management

   H. Ornamental horticulture instructors—Educational responsibilities in ornamental horticulture; may be at secondary, community college, or university level

II. Basic entry skills for careers in horticulture

   A. Math skills

   Examples: Addition, subtraction, division, multiplication, fractions, and decimals; bookkeeping, sales, inventory

   B. Mechanical skills

   Examples: Carpentry, electrical, plumbing

   C. Plant science

   Example: Basic botany or plant science

INFORMATION SHEET

III. Horticulture careers (Transparency 1)

A. Garden center employee

1. Nature of work
    - a. Take care of ornamental plants
    - b. Arrange plants
    - c. Clean
    - d. Stock supplies
    - e. Make deliveries
    - f. Give information concerning lawn care
2. Working conditions
    - a. Clean, pleasant, comfortable environment
    - b. Heated work area in winter
    - c. Protected outdoor work
3. Educational and personal qualifications
    - a. High school education
    - b. High school courses in business education and vocational agriculture
    - c. Work experience
    - d. Must enjoy meeting people
    - e. Enter as a laborer or clerk but opportunities for advancement are good

B. Golf course employee

1. Nature of work
    - a. Is involved in overall maintenance
    - b. Care for turf
    - c. Install and use irrigation equipment
    - d. Clean sand traps
    - e Prune shrubs and trees

INFORMATION SHEET

2. Working conditions
    a. Outdoor work
    b. Eight-hour days
3. Educational and personal qualifications
    a. High school education
    b. Vocational agriculture required
    c. Enjoy outdoor work
    d. Enter as a laborer or helper
    e. Parttime help during high school beneficial

C. Greenhouse employee
1. Nature of work
    a. Grows plants in artificially heated glass or plastic greenhouse
    b. Grows vegetables and or flowers
    c. Screens soil
    d. Mixes soil
    e. Transplants seedlings
2. Working conditions
    a. Indoor work
    b. Requires walking, stooping, and bending
    c. Manual labor
    d. Regular hours
3. Educational and personal qualifications
    a. High school education
    b. High school courses in biological sciences and vocational agriculture
    c. Start work as a laborer

D. Grounds maintenance employee (Transparency 2)
1. Nature of work
    a. Cares for area surrounding an industry or business

INFORMATION SHEET

b. Plants and cares for lawns and ornamental plants

c. Year-around employment

2. Working conditions

a. Outdoor work

b. Work with ornamental plants

c. Variety of work

d. Regular hours

3. Educational and personal qualifications

a. High school education

b. Knowledge of soil conditions, fertilizers, and plant identification

c. Enjoy working with plants, tools, and small garden equipment

d. Start work as a laborer

E. Landscape gardener

1. Nature of work

a. Designs and maintains plants in private homes, public buildings, or industrial plants

b. May be self-employed or work for a nursery or city

c. Works preparing soil for planting

d. Locates and sets trees

2. Working conditions

a. Work outdoors

b. Steady work

c. Either self-employed or employed by a nursery or city

INFORMATION SHEET

3. Educational and personal qualifications
    a. Highly skilled work
    b. College degree needed
    c. Have a sense of plant arrangement
    d. Must have work experience to enter field

F. Nursery employee (Transparency 3)

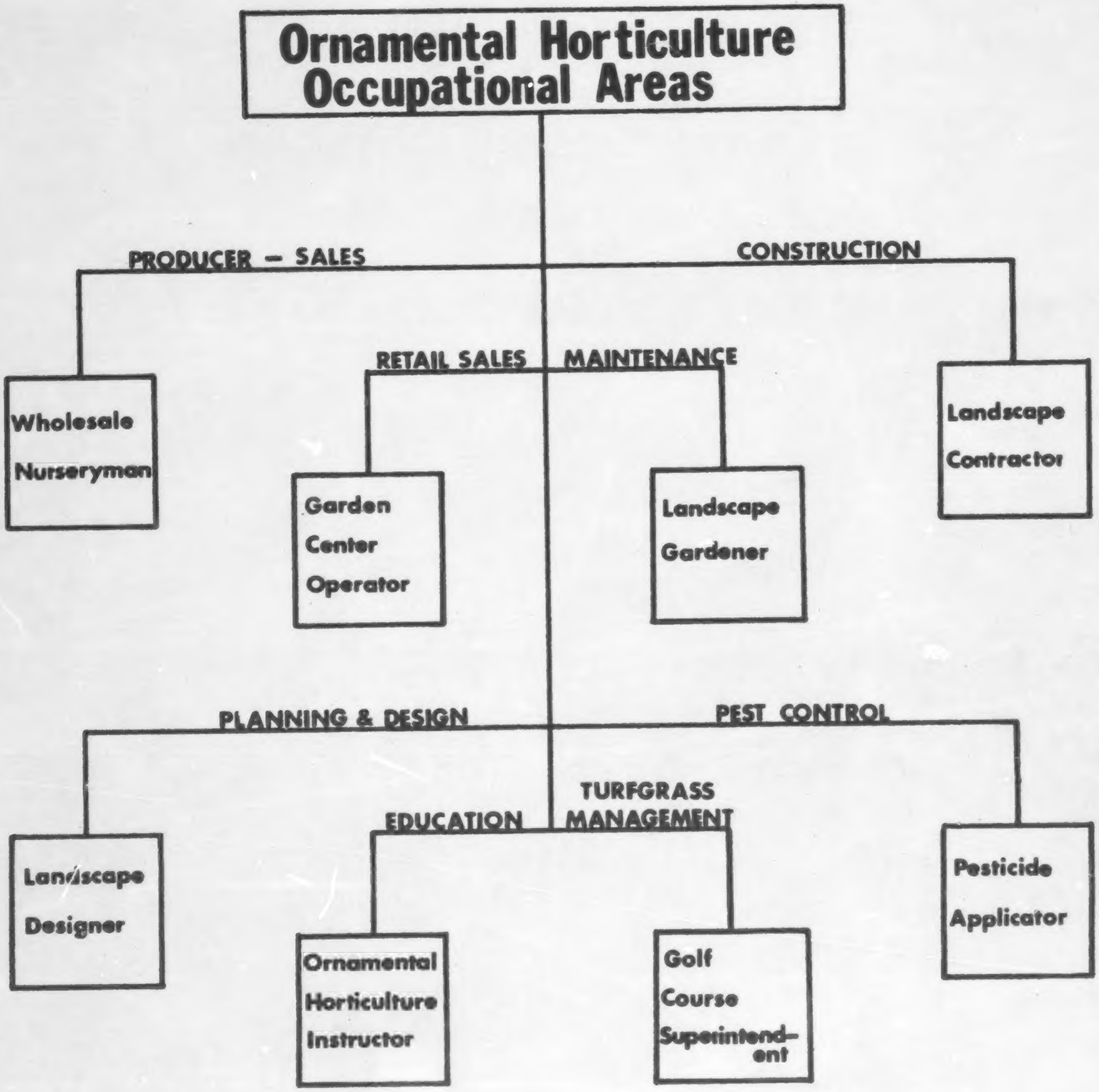
1. Nature of work
    a. Grows seedlings and plants for landscaping, fruit farm, and/or forest
    b. May work in variety of nurseries
    c. Prepares seed beds
    d. Plants seedlings
    e. Weeds
    f. Cultivates
    g. Prunes
2. Working conditions
    a. Outdoor work
    b. Limited amount work in greenhouse
    c. Manual labor
    d. Regular working hours
3. Educational and personal qualification
    a. Vocational agriculture required
    b. Work experience suggested
    c. Should enjoy working with plants
    d. Start work as a labor

INFORMATION SHEET

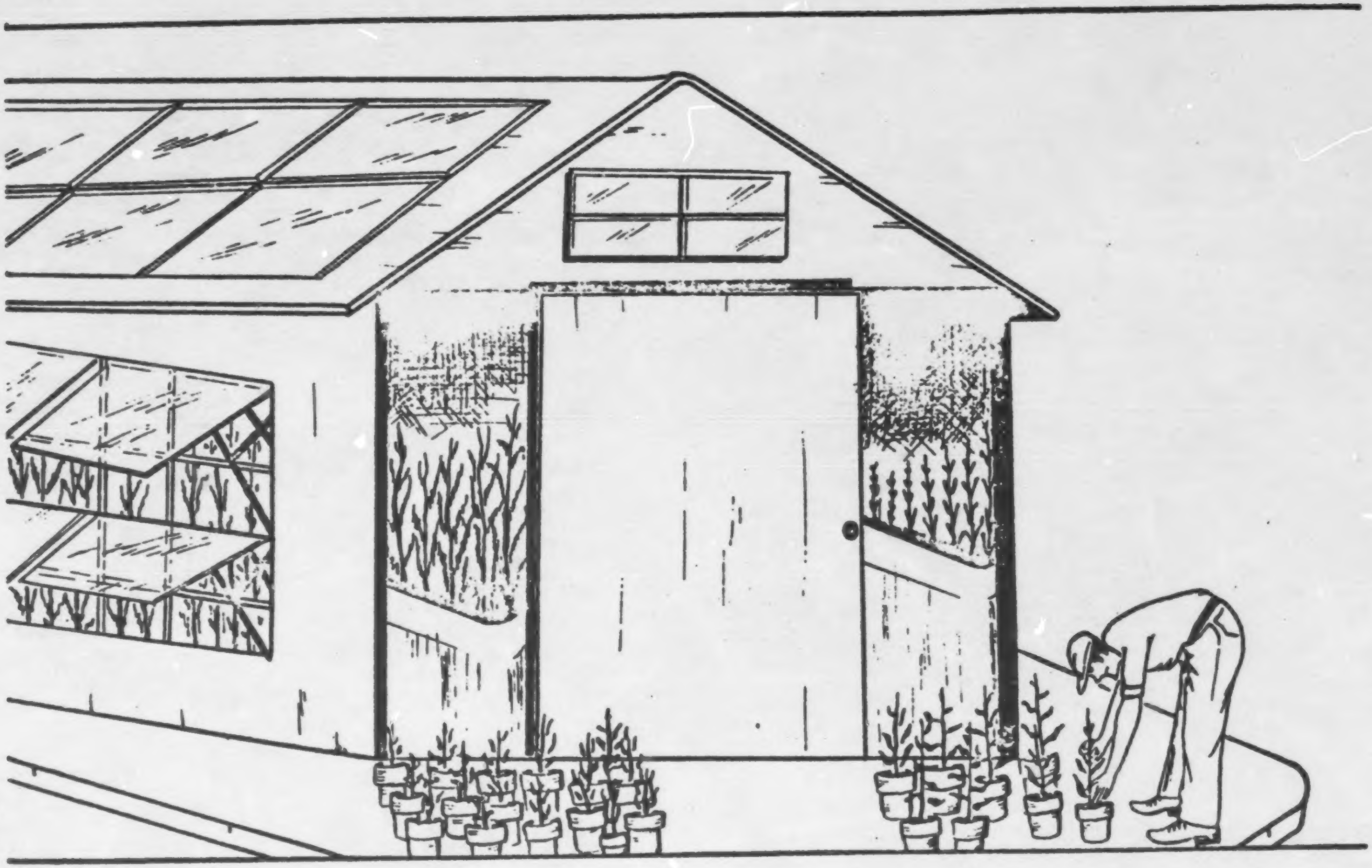
    e. Advancement depends on knowledge and skill

G. Tree pruner

    1. Nature of work
        a. Works for cities or privately owned companies
        b. Pruning major skill needed
    2. Working conditions
        a. Outdoor work
        b. Year-around work
        c. Judgement regarding safety is required
    3. Education and personal qualifications
        a. Skills learned on the job
        b. High school courses in shop, mechanics, business
        c. Enter the field as a laborer
        d. Advancement depends on willingness to work


Ornamental Horticulture
Occupational Areas
PRODUCER – SALES
CONSTRUCTION
Wholesale
Nurseryman
RETAIL SALES
MAINTENANCE
Landscape
Contractor
Garden
Center
Operator
Landscape
Gardener
PLANNING & DESIGN
PEST CONTROL
TURFGRASS
MANAGEMENT
EDUCATION
Landscape
Designer
Pesticide
Applicator
Ornamental
Horticulture
Instructor
Golf
Course
Superintendent

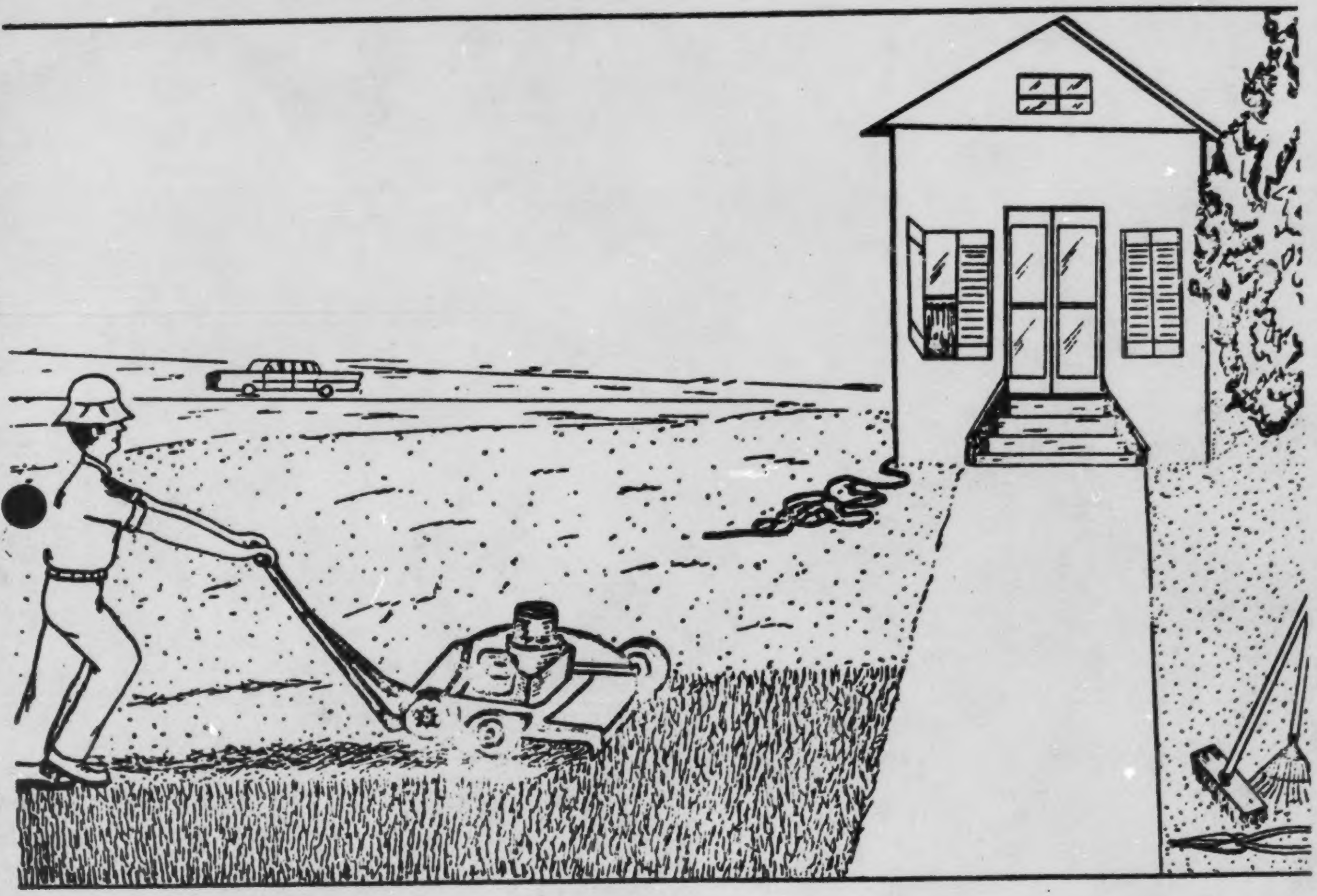
NURSERYMAN



TM 2

C-203-A

GROUNDSKEEPER



TM 3

CAREER OPPORTUNITIES
IN HORTICULTURE
UNIT VII

JOB SHEET #1—MAKE A FLOWER ARRANGEMENT

I. Equipment

- A. Shears or knife
- B. Florist's tape
- C. Block of foam, three by four by four inches
- D. Container, low rectangular
- E. Wire, eighteen gauge
- F. Red roses, siz
- G. Podocarpus, twelve
- H. White carnations, seven

II. Procedure

- A. Soak foam in water
- B. Place foam in container
- C. Tape foam in place
- D. Cut one rose, twelve inches long
- E. Wrap eighteen gauge wire around stem
- F. Place stem in foam, vertical to foam
- G. Add second rose at an angle to the other rose
- H. Place three carnations at right corner
- I. Add remaining roses and carnations
- J. Keep roses separate; do not place all roses together

CAREER OPPORTUNITIES
IN HORTICULTURE
UNIT VIII

JOB SHEET #2—TRANSPLANT A PLANT

I. Equipment

  A. Flat of herbaceous plants

  B. Peat pot

  C. Soil mixture

  D. Wooden labels

  E. Sprinkling can filled with water

  F. Felt tipped pen

II. Procedure

  A. Soak all plants

  B. Fill peat pot one-third full of soil mixture

  C. Use wooden label to remove plants from flats

  D. Hold plant upright in center of pot

  E. Fill around plant

  F. Firm soil around plant

  G. Tap bottom of pot

  H. Write name of plant on label

  I. Water thoroughly

CAREER OPPORTUNITIES
IN HORTICULTURE
UNIT VIII

JOB SHEET #3—PRUNE A TREE

I. Equipment

   A. Pruning saw

   B. Loppers

   C. Hand saw

   D. Tree paint

II. Procedure

   A. Remove all damaged, diseased, or insect-infested wood

   B. Remove competing branches and dense growth

   C. Shape tree

   D. Coat all pruning cuts

   E. Clear up debris

   F. Clean equipment, oil, and store

CAREER OPPORTUNITIES IN HORTICULTURE
UNIT VIII

TEST

1. Match the terms on the right to the correct definitions.

    ____ a. Implement landscape plans

    ____ b. Responsible for maintenance of landscaped areas

    ____ c. Educational responsibilities in ornamental horticulture; may be at secondary, community college, or university level

    ____ d. Responsible for creation of plans and specifications for landscape projects

    ____ e. Specializes in area of grounds maintenance dealing specifically with turf grass management

    ____ f. Produces ornamental landscape plant materials

    ____ g. Responsible for retail sales of ornamental landscape plant materials and supplies

    ____ h. Specializes in area of grounds maintenance dealing with control of pests

    1. Wholesale nurseryman
    2. Garden center operator
    3. Landscape contractor
    4. Landscape gardener
    5. Pesticide applicator
    6. Landscape designer
    7. Golf course superintendent
    8. Ornamental horticulture instructors

2. Name the three basic entry skills for careers in horticulture.

    a.

    b.

    c.

3. Describe the three specific horticulture careers given below.

   a. Garden center employees

      1) Nature of work

      2) Working conditions

      3) Educational and personal qualification

   b. Greenhouse employee

      1) Nature of work

      2) Working conditions

      3) Educational and personal qualifications

c. Landscape gardener

   1) Nature of work

   2) Working conditions

   3) Educational and personal qualifications

4. Demonstrate the ability to:

   a. Make a flower arrangement.

   b. Transplant a plant.

   c. Prune a tree.

CAREER OPPORTUNITIES IN HORTICULTURE
UNIT VIII
ANSWERS TO TEST

1. a. 3
   b. 4
   c. 8
   d. 6
   e. 7
   f. 1
   g. 2
   h. 5

2. a. Math skills
   b. Mechanical skills
   c. Plant science

3. Description should include:
   a. Garden center employee
      1) Nature of work
         a) Take care of ornamental plants
         b) Arrange plants
         c) Clean
         d) Stock supplies
         e) Make deliveries
         f) Give information concerning lawn care
      2) Working conditions
         a) Clean, pleasant, comfortable environment
         b) Heated work area in winter
         c) Protected outdoor work
      3) Educational and personal qualifications
         a) High school education
         b) High school courses in business education and vocational agriculture

   - c) Work experience
   - d) Must enjoy meeting people
   - e) Enters as a laborer or clerk but opportunities are good for advancement

b. Greenhouse employee

  1) Nature of work

   - a) Grow plants in artifically heated glass or plastic greenhouse
   - b) Grows vegetables and/or flowers
   - c) Screens soil
   - d) Mixes soil
   - e) Transplants seedlings

  2) Working conditions

   - a) Indoor work
   - b) Requires walking, stooping, and bending
   - c) Manual labor
   - d) Regular hours

  3) Educational and personal qualifications

   - a) High school education
   - b) High school courses in biological sciences and vocational agriculture
   - c) Start work as a laborer

C. Landscape gardener

  1) Nature of work

   - a) Designs and maintains plants in private homes, public buildings, or industrial plants
   - b) May be self-employed or work for a nursery or city
   - c) Works preparing soil for planting
   - d) Locates and sets trees

2) Work conditions
    a) Work outdoors
    b) Steady work
    c) Either self-employed or employed by a nursery or city
3) Educational and personal qualifications
    a) Highly skilled work
    b) College degree required
    c) Have sense of plant arrangements
    d) Must have work experience to enter field
4) Performance skills evaluated to satisfaction of instructor.

CAREER OPPORTUNITIES
IN NATURAL RESOURCES
UNIT IX

UNIT OBJECTIVE

After completion of this unit, the student should be able to describe occupations in natural resources and advantages of natural resources careers. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with career opportunities in natural resources to correct definitions.
2. List three areas of natural resources.
3. List the advantages of natural resource careers.
4. Describe three careers in natural resources.
5. Describe four areas in developing a park.
6. Interview natural resources worker.
7. Plan a park.
8. Demonstrate the ability to:
    a. Test soil pH.
    b. Measure solids in effluent.
    c. Test water hardness.
    d. Estimate number of board-feet in standing tree.

CAREER OPPORTUNITIES IN NATURAL RESOURCES
UNIT IX
SUGGESTED ACTIVITIES

I. Instructor:

  A. Provide student with objective sheet.

  B. Provide student with information assignments, and job sheets.

  C. Discuss unit and specific objectives.

  D. Discuss information and assignment sheets.

  E. Demonstrate procedures outlined in job sheets.

  F. Inform students of person in community involved with natural resources.

  G. Have a speaker attend class and give a presentation on natural resources.

  H. Take a field trip to visit a natural resource person at work.

  I. Give test.

II. Student:

  A. Read objectives.

  B. Study information sheet.

  C. Demonstrate the ability to accomplish the procedures outlined in the job sheets.

  D. Complete interview and turn in assignment sheet.

  E. Go on field trip with class.

  F. Prepare questions to ask resource person.

  G. Take test.

INSTRUCTIONAL MATERIAL

I. Included in this unit:

  A. Objective sheet

  B. Information sheet

  C. Transparency masters: TM1—Types of Natural Resource Careers

D. Assignment sheets

  1. Assignment Sheet #1—Interview Natural Resources Worker

  2. Assignment Sheet #2—Plan a Park

E. Job sheets

  1. Job Sheet #1—Test Soil pH

  2. Job Sheet #2—Measure Solids in Effluent

  3. Job Sheet #3—Test Water Hardness

  4. Job Sheet #4—Estimating Number of Board Feet in Standing Trees

F. Test

G. Answers to test

II. References:

A. Curtis, Samuel M., and Mercer, Robert J., *Exploring Occupations in Agribusiness and Natural Resources.* New York: Gregg Division/McGraw Hill Book Company, 1976.

B. Hoover, Norman K. *Handbook of Agricultural Occupations.* 3rd ed. Danville, Illinois, Interstate Printers and Publishers, 1964.

CAREER OPPORTUNITIES
IN NATURAL RESOURCES
UNIT IX
INFORMATION SHEET

I. Terms and definitions

- A. Concession stand—Small open-air building where drinks and snacks are sold
- B. Collection roads—Roads which collect traffic into main road
- C. Feeder road—Branch off road from collection road
- D. Cove—Sheltered inlet or bay
- E. Marina—Boat dock
- F. Terrace—Mound of soil strip along hillside to prevent erosion
- G. pH—Unit of measuring soil acidity or alkalinity
- H. Influent—Sewage coming into sewage treatment plant
- I. Effluent—Water leaving sewage plant
- J. Cruising—Taking a forest inventory
- K. Felled—Tree cut by lumberman
- L. Purification—Filtering and chlorination of water
- M. Hard water—High concentration of minerals in water
- N. Soft water—Low concentration of minerals in water

II. Areas of natural resources

- A. Conservation
- B. Wildlife
- C. Recreation

III. Advantages of natural resources careers

- A. Increased employment opportunities
- B. Increased use of land planning
- C. Involved in agriculture
- D. Help others

INFORMATION SHEET

IV. Natural resource careers (Transparency 1, Assignment Sheet #1)

A. Soil conservationist

1. Nature of work
    a. Works with people
    b. Works with U.S. Department of Agriculture Soil Conservation Service
    c. May work for college, bank, or public utility
    d. Works with state and federal agencies
2. Working conditions
    a. Works forty-hour week in the field
    b. Works regular hours
    c. Teaches skills and explains ideas through speaking and writing
3. Education
    a. High school education
    b. High school courses in vocational agriculture and plant and soil science
    c. Four-year college degree in agronomy or natural resources
    d. Summer training

B. Purification plant operator

1. Nature of work
    a. Skills needed in gathering, analyzing, and using information
    b. Must follow directions
    c. Able to express self through writing
2. Working conditions
    a. Work done away from desk
    b. Unpleasant working conditions, although modern plants have more pleasant conditions
3. Education
    a. College degree in environmental health
    b. Experience recommended

INFORMATION SHEET

C. Park planner
   1. Nature of work
      a. Develops areas for public use
      b. Reads topography maps
      c. Supervises other people
   2. Working conditions
      a. Both outside and desk work
      b. Hours are constant
      c. Work regular hours
   3. Education
      a. High school courses in vocational agriculture, biology, geology, mathematics, physics, geometry, sociology
      b. Summer job in natural, state, and city parks

D. Waste water treatment plant operator
   1. Nature of work
      a. Needs skills in mechanics and mathematics
      b. Supervises other employees
      c. Employed by city and private industry
      d. Ensures safety of water supply
   2. Working conditions
      a. Indoor work
      b. Exposed to unpleasant odors and noise
   3. Education
      a. Complete two to four years of college
      b. High school courses in vocational agriculture, chemistry, and physics
      c. Complete waste water treatment operator's course

E. Wildlife conservation officer
   1. Nature of work—Researches, propagates, controls, protects, and manages sport fish and game animals

INFORMATION SHEET

2. Working conditions
    a. Outdoor work
    b. Irregular hours
3. Education
    a. High school education
    b. Post-secondary education in wildlife management

F. Fish hatchery worker
1. Nature of work
    a. Works under supervision of fish biologist
    b. Works with fish
2. Working conditions
    a. Forty-hour week
    b. Works outside
    c. Works around water
3. Education—No special qualifications

G. Forestry aid
1. Nature of work
    a. Requires good judgment and alertness
    b. Should enjoy working with people
    c. Protects and conserves timber lands
    d. Gathers information on rainfall, temperature, and stream flow
2. Working conditions
    a. Outdoors
    b. All types of weather
    c. Isolated work
3. Education
    a. High school degree

INFORMATION SHEET

- b. High school courses in vocational agriculture, physics, and biology
- c. Post-secondary degree in forestry

H. Game bird propagator

- 1. Nature of work
    - a. Specializes in raising and maintaining game birds
    - b. Hatches, raises, and distributes game birds
- 2. Working conditions
    - a. Outdoor work
    - b. Long and irregular hours
- 3. Education
    - a. High school degree
    - b. High school courses in vocational agriculture, geology, and biology
    - c. Knowlege of poultry farming

V. Areas of park development (Assignment Sheet #2)

A. Swimming area

- 1. Wide shallow area
- 2. Sandy
- 3. Near lake
- 4. Face east

B. Boat area

- 1. Deep area of water
- 2. Away from swimming area
- 3. Cove, ideal area

C. Picnic and camping area

- 1. Located in large trees
- 2. Located on level ground

INFORMATION SHEET

D. Game area

    1. Located in level area

    2. Face north

    3. Near swimming and boating

E. Nature trails

    1. Points of interest

    2. Trails should not be straight

F. Restrooms and showers—Near swimming and playing area

G. Parking lots—Located where people will not walk through

TYPES OF NATURAL RESOURCE CAREERS

State/National Park Employee

Game Management Employee

Recreation Farm Manager

Fish Hatchery Worker

Soil Conservation Aid

Game Bird Propagator

Wildlife Conservation Officer

Fire Lookout

CAREER OPPORTUNITIES IN NATURAL RESOURCES

ASSIGNMENT SHEET #1
Interview Natrual Resources Worker

Select an individual to interview that is either directly employed in agricultural resources or working in a related field. Using the form below as a basic guide, find out all you can about the individual's working conditions, educational and personal qualifications required for the job, and the general nature of the work. Additional pages may be added.

1. Name of Occupation: ______________________________

____

____

2. Job Description: ______________________________

____

____

3. Educational/Personal Qualities Required: ______________________________

____

____

4. What are the working conditions? ______________________________

____

____

5. What does the person like and dislike about the position? ______________________________

____

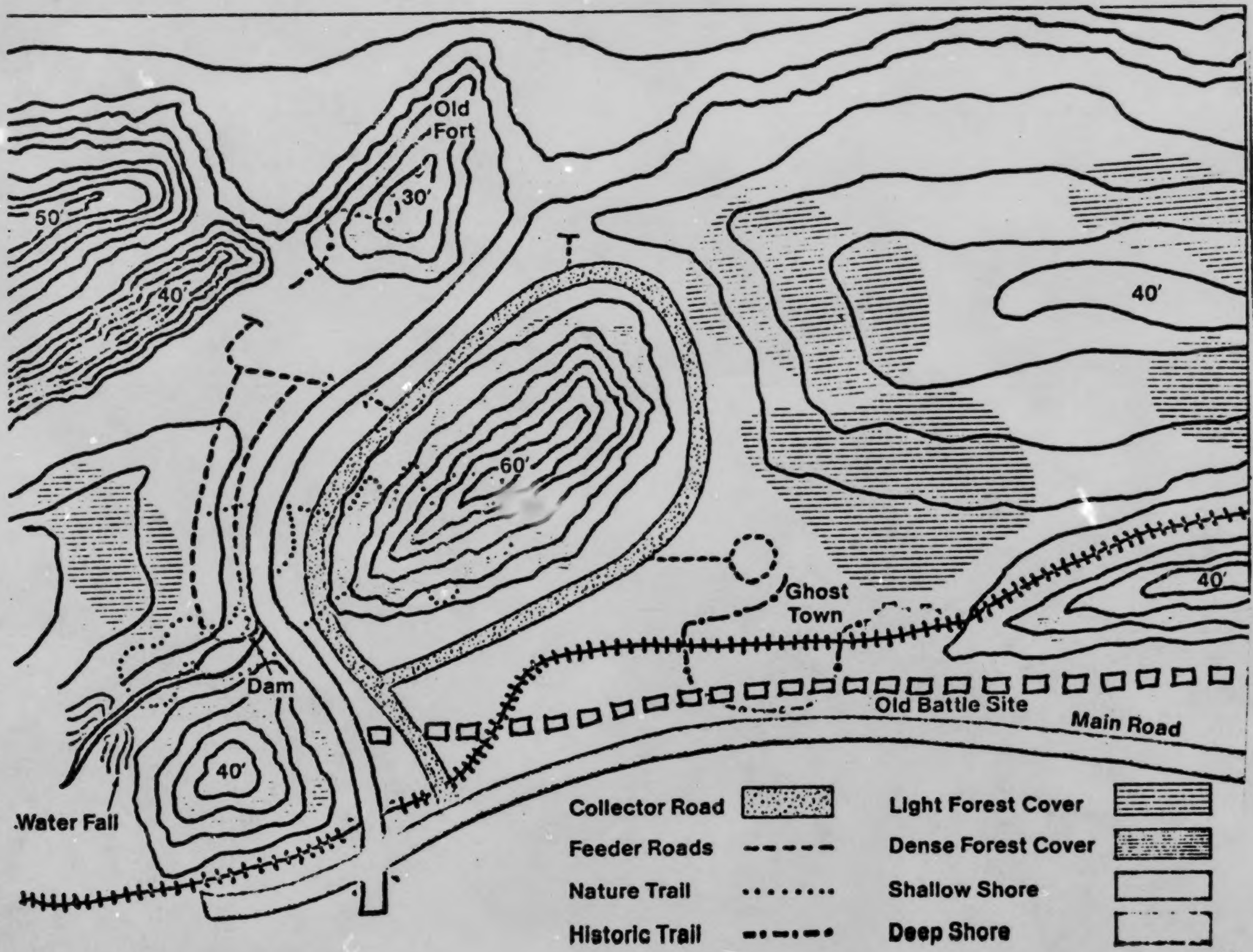
____

CAREERS OPPORTUNITIES IN NATURAL RESOURCES

UNIT IX

ASSIGNMENT SHEET #2—PLAN A PARK

On the map below place the following items: swimming area, marina, camping area, picnic areas, game areas, parking area, rest room and shower, and concession stands.


Old Fort
30'
50'
40'
60'
40'
40'
Ghost Town
Old Battle Site
Main Road
Dam
40'
Water Fall
Collector Road
Feeder Roads
Nature Trail
Historic Trail
Light Forest Cover
Dense Forest Cover
Shallow Shore
Deep Shore

CAREER OPPORTUNITIES
IN NATURAL RESOURCES
UNIT IX

JOB SHEET #1—TEST SOIL pH

I. Equipment

   A. Soil samples, two

   B. Truoy soil reaction test kit

   C. Pencil and paper

II. Procedure

   A. Place three drops reagent N into first hole of test block

   B. Add soil to absorb three drops; mix

   C. Move soil to one side of test block hole

   (NOTE: Soil should shine if correct amount is added. If soil doesn't shine, add more solution.)

   D. Sprinkle reagent M to cover sample

   E. Wait two minutes

   F. Check color of soil sample with color chart in test kit

   G. Determine amount of acid in soil

   H. Recommend if lime should or shouldn't be added

   I. Repeat above steps for second mix

CAREER OPPORTUNITIES
IN NATURAL RESOURCES
UNIT IX

JOB SHEET #2—MEASURE SOLIDS IN EFFLUENT

I. Equipment

   A. One liter of soil

   B. One liter of water

   C. Imhoff cone and stand

   D. Container to mix effluent and one liter of water

   E. Spatula

II. Procedure

   A. Mix any amount less than one liter of soil and one liter of water

   B. Fill Imhoff cone with water and soil to one liter mark

   C. Allow to stand for forty-five minutes

   D. Use spatula to scrape materials down into cone

   E. Allow fifteen minutes to settle

   F. Read amount of solid in milliliters

   (NOTE: Less than thirty milliliters is allowed by treatment plan.)

CAREER OPPORTUNITIES
IN NATURAL RESOURCES
UNIT IX
JOB SHEET #3—TEST WATER HARDNESS

I. Equipment

A. Test tubes

B. Bottle of hardness buffer #1

C. Bottle of hardness indicator #2

D. Bottle of titrating solution

(NOTE: The above items are in a water hardness test.)

E. Sample of water

II. Procedure

A. Rinse test tubes with water

B. Fill test tube half full with water sample

C. Add three drops buffer #1

D. Move test tube in a circular motion

(NOTE: If solution is spilled, start over.)

E. Add three drops of indicator #2

F. Move test tube in a circular motion

(NOTE: Solution is red color.)

G. Add titrating solution to solution

H. Count drops of titrating solution until blue color appears

(NOTE: Each drop is equal to one grain of hardness per one gallon of water.)

I. Use chart below to determine water hardness

Water Hardness Chart

water	grains/gallon
Soft	0-9
Medium Soft	10-17
Hard	18-25
Very Hard	over 25

CAREER OPPORTUNITIES
IN NATURAL RESOURCES
UNIT IX
JOB SHEET #4—ESTIMATE NUMBER OF BOARD FEET IN STANDING TREE

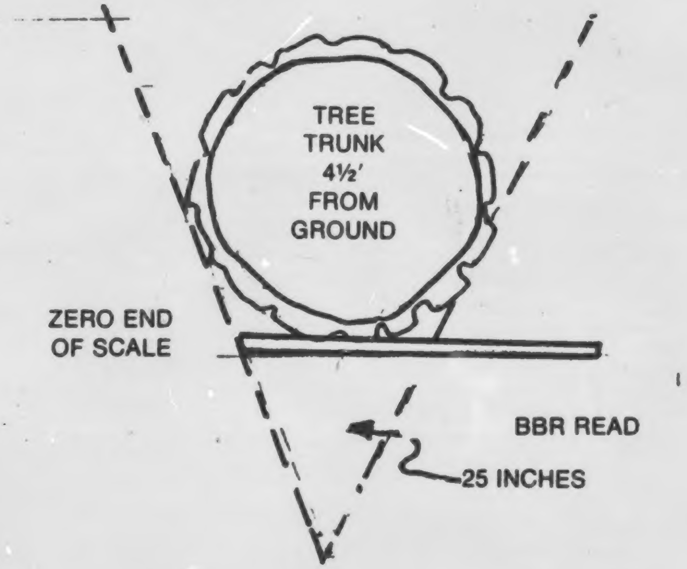
I. Equipment

- A. 100 foot tape
- B. Tree at least fourteen inches in diameter
- C. Tree scale stick
- D. Pencil and paper

II. Procedure

- A. Measure diameter of tree 4½ feet from ground
- B. Place stick out in front of body against tree trunk

  (NOTE: The side which reads diameter of tree should be facing out.)
- C. Make sure words on stick are on left end
- D. Look past left side of tree trunk
- E. Line up left end of stick with left edge of tree
- F. Look across stick to right edge of tree trunk



JOB SHEET #4

G. Measure 66 feet away from tree

(NOTE: If on slope, measure on side of slope.)

H. Hold scale stick up and down

I. Hold scale stick 25 inches away from eyes

(NOTE: Measure 14 inches from the ground to a point where the trunk isn't crooked, less six inches in diameter or trunk forks.)

J. Make sure number of sixteen foot log faces you

K. Place number one of same edge face down, five points up

L. Sight tree with stick to lowest and highest point of trunk to be cut

M. Read the number of 16 foot logs

(NOTE: This should be a number between one and five.)

N. Read nearest half logs

O. Record the number of logs

P. Estimate number of board feet of lumber

Tree number	Tree diameter	Number of 16 logs	Estimated Board feet
1			
2			
3			
4			

C-245-A

CAREER OPPORTUNITIES
IN NATURAL RESOURCES
UNIT IX

TEST

1. Match the terms on the right to the correct definitions.

____ a. Tree cut by lumberman

____ b. Low concentration of minerals in water

____ c. Small open-air building where drinks and snacks are sold

____ d. Boat dock

____ e. Unit of measuring soil acidity or alkalinity

____ f. Water leaving sewage plant

____ g. Filtering and chlorination of water

____ h. Taking a forest inventory

____ i. High concentration of minerals in water

____ j. Sewage coming into sewage treatment plant

____ k. Roads which collect traffic into main road

____ l. Mound of soil strip along hillside to prevent erosion

____ m. Branch off road from collection road

____ n. Sheltered inlet or bay

1. Concession stand
2. Collection roads
3. Feeder road
4. Cove
5. Marina
6. Terrace
7. pH
8. Influent
9. Effluent
10. Cruising
11. Felled
12. Purification
13. Hard water
14. Soft water

2. List three areas of natural resources.

a.

b.

c.

3. List the advantages of natural resource careers.
   - a.
   - b.
   - c.
   - d.
4. Describe the three careers in natural resources listed below.
   - a. Soil conservationist
     1. Nature of work
     2. Working conditions
     3. Education
   - b. Park planner
     1. Nature of work
     2. Working conditions
     3. Education

- c. Game bird propagtor
    1. Nature of work
    2. Working conditions
    3. Education

5. Describe the following areas in developing a park.
    - a. Swimming area
    - b. Game area
    - c. Picnic and camping area
    - d. Nature trails
6. Interview natural resources worker.
7. Plan a park.
8. Demonstrate the ability to:
    - a. Test soil pH.
    - b. Measure solid in effluent.
    - c. Test water hardness.
    - d. Estimate number of board feet in standing tree.

CAREER OPPORTUNITIES
IN NATURAL RESOURCES
UNIT IX
ANSWERS TO TEST

1.
   a. 11
   b. 14
   c. 1
   d. 5
   e. 7
   f. 9
   g. 12
   h. 10
   i. 13
   j. 8
   k. 2
   l. 6
   m. 3
   n. 4

2.
   a. Conservation
   b. Wildlife
   c. Recreation

3.
   a. Increased employment opportunities
   b. Increased use of land plannning
   c. Involved in agriculture
   d. Help others

4. Descriptions should include:

a. Soil conservationist
   1) Nature of work
      a) Works with people
      b) Works with U.S. Department of Agriculture Soil Conservation Service
      c) May work for college, bank, or public utility
      d) Works with state and federal agencies
   2) Working conditions
      a) Works forty-hour weeks in the field
      b) Works regular hours
      c) Teaches skills and explains ideas through speaking and writing

- 3) Education
    - a) High school education
    - b) High school courses in vocational agriculture and plant and soil science
    - c) Four-year college degree in agronomy or natural resources
    - d) Summer training

b. Park planner

- 1) Nature of work
    - a) Develops areas for public use
    - b) Reads topography maps
    - c) Supervises other people
- 2) Working conditions
    - a) Both outside and desk work
    - b) Hours are constant
    - c) Work regular hours
- 3) Education
    - a) High school courses in vocational agriculture, biology, geology, mathematics, physics, geometry, sociology
    - b) Summer job in natural, state, and city parks

c. Game bird propagator

- 1) Nature of work
    - a) Specializes in raising and maintaining game birds
    - b) Hatches raises, and distributes game birds
- 2) Working conditions
    - a) Outdoor work
    - b) Long and irregular hours

        3) Education
            a) High school degree
            b) High school courses in vocational agriculture, geology, and biology
            c) Knowledge of poultry farming

5. Descriptions should include:
    a. Swimming area
        1. Wide shallow area
        2. Sandy
        3. Near lake
        4. Face east
    b. Game area
        1. Located in level area
        2. Face north
        3. Near swimming and boating
    c. Picnic and camping area
        1. Located in large trees
        2. Located on level ground

    d. Nature trails
        1) Points of interest
        2) Trails should not be straight
6. Evaluated to satisfaction of instructor.
7. Evaluated to satisfaction of instructor.
8. Performance skills evaluated to satisfaction of instructor.

CAREER OPPORTUNITIES
IN PRODUCTION AGRICULTURE
UNIT X

UNIT OBJECTIVE

After completion of this unit, the student should be able to describe types of farmers in production agriculture and careers in production agriculture. This knowledge will be evidenced through demonstrating and by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with careers in production agriculture with the correct definitions.
2. List five qualities of an agricultural producer.
3. List four important events in the history of production agriculture.
4. List four facts about production agriculture in Nebraska.
5. Describe two general types of farmers.
6. Describe two careers in production agriculture.
7. Describe how to prepare for a production agriculture career.
8. Apply a rule to calculate the number of bushels of corn per acre.
9. Demonstrate the ability to:
    a. Candle eggs.
    b. Grade feeder cattle.

CAREER OPPORTUNITIES IN PRODUCTION AGRICULTURE
UNIT X
SUGGESTED ACTIVITIES

I. Instructor:

A. Provide student with objective sheet.

B. Provide student with information, assignment and job sheets.

C. Make transparency.

D. Discuss unit and specific objectives.

E. Discuss information and assignment sheets.

F. Demonstrate procedures outlined in job sheets.

G. Discuss with the students the responsibilities of each type of agricultural production job.

H. Let students research any new agricultural production jobs that have developed.

I. Visit a dairy or poultry farm.

J. Write to Department of Agriculture, Washington, D. C., 20250 for additional information.

K. Show filmstrip "milking cows" from Pennsylvania Department of Agriculture, Harrisburg, PA 17111.

L. Hatch out baby chick.

M. Visit cattle sale.

N. Plan panel discussion of county extension agent, farmer, and dairyman.

O. Give test.

II. Students:

A. Read objectives.

B. Study information sheets.

C. Complete assignment sheets.

D. Demonstrate the ability to accomplish the procedures outlined in the job sheets.

E. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

   A. Objective sheet

   B. Information sheets

   C. Transparency master: TM 1—Types of Farmers

   D. Assignment sheets

      1. Assignment Sheet #1—Careers in the County

      2. Assignment Sheet #2—Calculate Number of Seed to Plant

      3. Assignment Sheet #3—Develop Dude Ranch Brochure

   E. Answers to assignment sheets

   F. Job sheets

      1. Job Sheet #1—Candle Eggs

      2. Job Sheet #2—Grade Feeder Cattle

   G. Test

   H. Answers to test

II. References:

   A. Hoover, Norman K. *Handbook of Agricultural Occupations*, Danville, Illinois; The Interstate Printers and Publishers, Inc. 1964.

   B. *Encylopedia of Careers and Vocational Guidance* Volume II Third Edition.

   C. Samual, Curtis M.; Robert, Mercer J. *Careers in Focus* New York, New York; McGraw Hill Book Company.

CAREER OPPORTUNITIES IN PRODUCTION AGRICULTURE
UNIT X
INFORMATION SHEET

I. Terms and definitions

A. Agricultural producers—Those operating units that produce food and fiber for the world

B. Career—Course of continued progress in the life work of a person or progress through life in a series of related occupations or activities

C. Crop share rent—Producer who uses land belonging to another and pays for its use by giving owner a share of crop

D. Diversified production—Producing several products instead of just one

E. Orchardist—Person involved in production of fruits and nuts

F. Specialized producer—Person who deals in the production of one item

G. Sire—Father of offspring

H. Dam—Mother of offspring

I. Pureblood lines—Breed that has not been crossed with another breed

J. Heifer—Female calf

K. Steer—Neutered male cow

L. Translucent—Lets light through

M. Feeder—Eight to ten month old calf, doubling weight in 7½ months, and selling at 900 to 1000 lbs.

N. Silage—Chopped stalks and other parts of plants used for winter feed

O. Hybrid—Special variety

P. Cash rent—Producer who pays so much cash per acre and keeps all crops

Q. Medium flat seed corn—Seed corn classified by shape of kernel, round or flat

II. Qualities of an agricultural producer

A. Requires more skills than past

B. Enjoys working with plants and animals

INFORMATION SHEET

- C. Has physical strength, stamina, and good health
- D. Enjoys outdoors and variety of weather
- E. Likes to work alone
- F. Adjusts to irregular hours

  Example: During planting and harvesting
- G. Has business and mechanical skills

III. History of production agriculture

- A. 95% of colonial Americans were farmers
- B. Wheat production began 400 B.C.
- C. Mechanization developed in 1800
- D. Population in farming has decreased from 10 million in 1950 to 3.5 million in 1980
- E. Today's farm is larger in size and number of livestock

IV. Production agriculture in Nebraska

- A. Nebraska ranks first in production of alfalfa meal
- B. Nebraska ranks second in production of feeder cattle
- C. Nebraska ranks sixth in production of sheep slaughter
- D. Nebraska ranks sixth in hog production
- E. In 1975 net income of Nebraska farmers was $17,613

V. General types of farmers (Transparency 1)

- A. Full-time farmer
  1. Raises and harvest food and feed crops
  2. Raises and breeds livestock and or poultry
  3. Is diversified
  4. May do custom work with neighbors

INFORMATION SHEET

- B. Part-time farmer
  - 1. Obtains part of income from farm
  - 2. Usually has small farm
  - 3. Is increasing in numbers
- C. Tenant farmer
  - 1. Similiar to owner-operator
  - 2. Differences in ownership
    - a. Cash rent
    - b. Crop-share rent
- D. Vacation farm operator (recreation farmer)
  - 1. Farms owned by urban family
  - 2. Similiar to dude ranches

VI. Careers in production agriculture

- A. Dairy farmer
  - 1. Nature of work
    - a. Works with dairy cows
    - b. Milk, major product
    - c. Milks twice a day everyday
    - d. Puts up feed for dairy cows
    - e. Removes animal waste
  - 2. Working conditions
    - a. Works in all types of weather
    - b. Works at early and late hours
    - c. Observes herd during calving and breeding periods

INFORMATION SHEET

3. Education
    a. High school education
    b. Work experience
    c. High school courses in vocational agriculture, feed and feeding, dairy production, and genetics

B. Livestock farmer and rancher
    1. Nature of work
        a. Works with hogs, cattle, and sheep
        b. Largest farms found in Nebraska
        c. Buys livestock and feed them to market weight
    2. Working conditions
        a. Vary with area and farm
        b. Works in all weather
        c. Works alone
        d. Income is all at once
    3. Education
        a. High school education
        b. Work experience needed
        c. Post-secondary education
        d. High school courses in vocational agriculture, feeds, and feeding

C. Poultry farmer
    1. Nature of work
        a. Raises chickens to sell eggs and broilers
        b. Dixon county, largest numbers in Nebraska
    2. Working conditions
        a. Works with machinery
        b. Works seven days a week
        c. Odors and dust

INFORMATION SHEET

3. Education
    a. Knowledge of feeding and raising poultry
    b. Work experience
    c. High school education
    d. Post-secondary education

D. Grain farmer

1. Nature of work
    a. Plants and harvests wheat, corn, sorghum, and/or soybeans
    b. Irrigates
    c. Income depends on weather
    d. Controls weeds and insects while crops are growing
2. Working conditions
    a. Paid only when crop is sold
    b. Works alone
    c. Depends on grain farm
    d. Long hours
3. Education
    a. High school education
    b. Post-secondary courses in soil and crop production
    c. High school courses in vocational agriculture and soil and crop science

VII. Preparation for production agriculture career

A. Enroll in vocational agriculture

B. Join Future Farmers of America or 4-H

C. Obtain further training at a university or at two-year technical school

D. Work on a ranch or farm during the summer

INFORMATION SHEET

VIII. Calculating number of bushels of corn per acre

- A. Acres x seeds planted/acre=Total seeds
- B. Total seeds ÷ seeds/bushel = Number of bushels
- C. Number of bushels x cost/bushel = Cost
- D. Cost x % discount = Final cost

TYPES OF FARMERS

GENERAL TENANT

PART-TIME

VACATION

TM 1

C-263-A

CAREER OPPORTUNITIES
IN PRODUCTION AGRICULTURE
UNIT X

ASSIGNMENT SHEET #1—CAREERS IN THE COUNTY

Within your county there should be numerous production agriculture people employed. Collect the types of producers and rank them according to numbers involved. After each producer give a description as to what he/she does in his/her job.

CAREER OPPORTUNITIES
IN PRODUCTION AGRICULTURE
UNIT X

ASSIGNMENT SHEET #2—CALCULATE NUMBER OF SEED TO PLANT

Jeri Sodbuster of Agieville, Nebraska 68000 (phone 366-8104) wants to plant twenty acres of Pirate Seed corn at 22,000 seeds per acre of Pirate number XL-21. Jeri likes to plant medium flat corn which has 88,000 seeds per bushel at a cost of $40 per bushel. If Jeri buys her seed corn today she will get a 10% discount. Calculate the number of bushels of seed corn Jeri needs to buy. Fill out the seed corn order form below.

PIRATE SEED CORN COMPANY

ORDER FORM

Customer's Name ____________________

Address: ____________________

Phone: ____________________

Quanity	Type of Seed	Variety	Unit Price	Cost
			Subtotal	
			Less discount (10%)	
			Total	

CAREER OPPORTUNITIES
IN PRODUCTION AGRICULTURE
UNIT X

ASSIGNMENT SHEET #3—DEVELOP DUDE RANCH PROCHURE

Luke Ludden of Miloberg, Nebraska owns a 350 acre dude ranch 3 miles south of Miloberg on Blacktop 30. Luke's dude ranch is for children and adults to enjoy the outdoors of Nebraska. Luke's ranch is near the North Platte river and has many horse trails to take. The ranch is well equipped with a bunkhouse, dining hall, campfire area, swimming pool, rifle range, and beautiful scenery. Develop a brochure for Luke's prospective customers.

CAREER OPPORTUNITIES
IN PRODUCTION AGRICULTURE
UNIT X

ANSWERS TO ASSIGNMENT SHEET

Assignment Sheet #2

PIRATE SEED CORN COMPANY

ORDER FORM

Customer's Name Jeri Sodbuster

Address: Agieville, NE 68000

Phone: 366-8104

Quantity	Type of Seed	Variety	Unit Price	Cost
5 bushels	Corn	XL-21	$40/bushel	$200.00

Subtotal	$200.00
Less discount (10%)	20.00
Total	$180.00

CAREER OPPORTUNITIES
IN PRODUCTION AGRICULTURE
UNIT X

JOB SHEET #1—Candling Eggs

I. Equipment

- A. Grade A eggs, 4
- B. Egg carton
- C. Candler
- D. Pen
- E. Egg air cell gauge

II. Procedure

- A. Set candler in dark part of room
- B. Set equipment near an electric outlet
- C. Number eggs 1-4
- D. Turn candler on
- E. Hold large end against candler with small end downward
- F. Measure air cell size
- G. Twirl egg
- H. Grade egg yolk
- I. Fill in chart below

CHART 1

Egg	Air Cell Grade	Yolk Outline Grade	Final Grade
Egg 1			
Egg 2			
Egg 3			
Egg 4			

JOB SHEET #1

Grade	Air Cell Size	Yolk Outline
AA	⅛" or less	Slightly defined
A	⅛" or ¼"	Fairly well defined
B	¼" to ⅜"	Well defined
C	⅜" or larger	Plainly visible

CAREER OPPORTUNITIES
IN PRODUCTION AGRICULTURE
UNIT X
JOB SHEET #2—GRADE FEEDER CATTLE

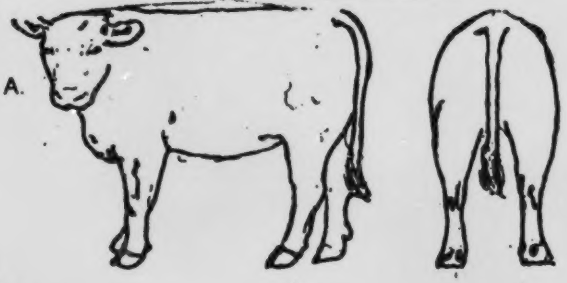
I. Equipment
   - A. 4 steers or slides of animals
   - B. Pencil and paper

II. Procedures

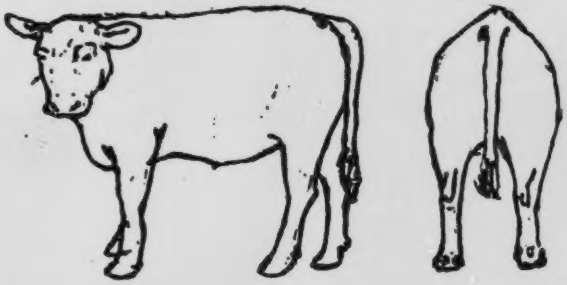
(NOTE: Use criteria on the next page to grade the cattle pictured below.)

		COMPARING	
		A & B	C & D
A.	Has shorter, wider head	______	______
B.	Head is narrow and long	______	______
C.	From viewing the hindquarter which is more roof shaped	______	______
D.	Which one's back is more round	______	______
E.	Deepest twist	______	______
F.	Shallowest twist	______	______
G.	Legs are shorter and straighter	______	______
H.	Legs longer and crookey	______	______
I.	Viewed from side straight back	______	______
J.	Not a straight back	______	______
K.	Thickest round	______	______
L.	Thinnest round	______	______
M.	Has the deepest body	______	______
N.	Narrow body	______	______
O.	Between A&B which is the better calf	______	
P.	Between C&D which is the better calf		______
Q.	Between two top steers	______	______
R.	Place the top steer as Prime	______	
S.	Second steer as choice	______	
T.	Third steer as good	______	
U.	Fourth steer as standard	______	

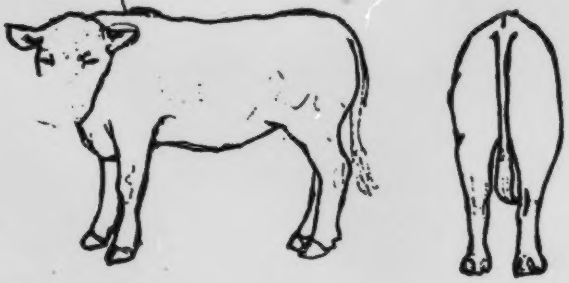
A.



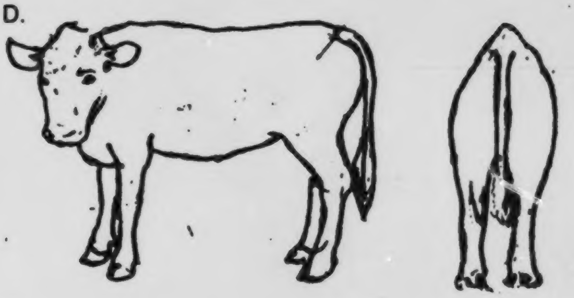
C.



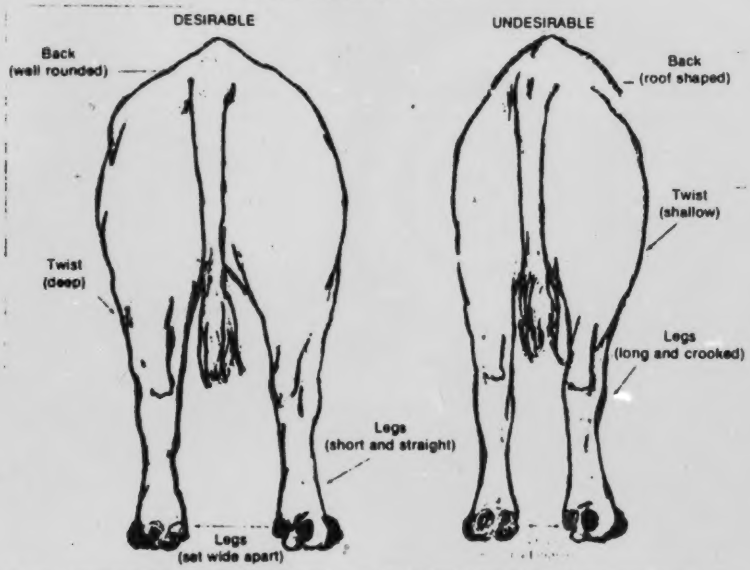
B.

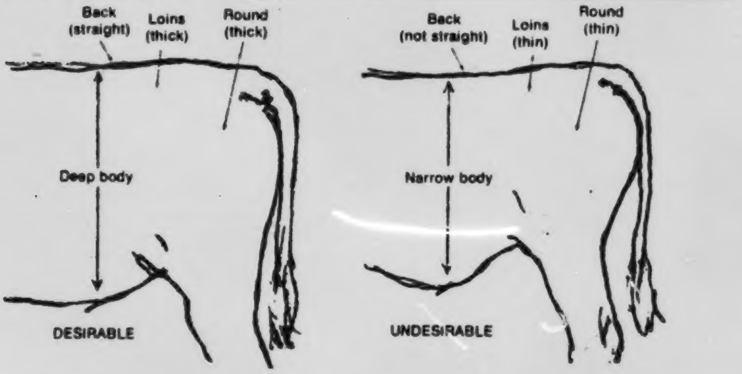


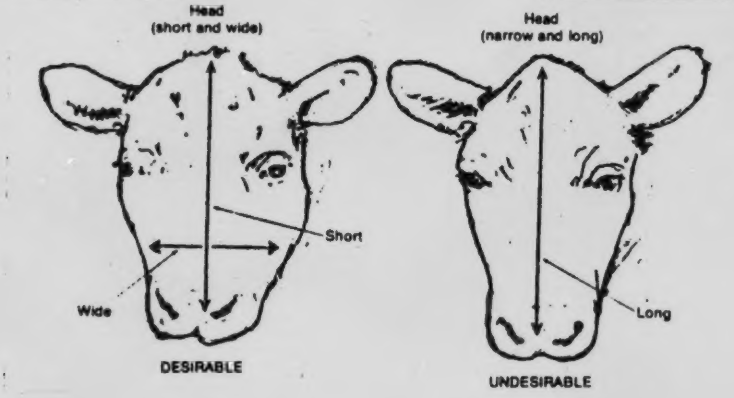
D.



JOB SHEET #2


DESIRABLE
Back
(well rounded)
Twist
(deep)
Legs
(short and straight)
Legs
(set wide apart)
UNDESIRABLE
Back
(roof shaped)
Twist
(shallow)
Legs
(long and crooked)


Back
(straight)
Loins
(thick)
Round
(thick)
Deep body
DESIRABLE
Back
(not straight)
Loins
(thin)
Round
(thin)
Narrow body
UNDESIRABLE


Head
(short and wide)
Short
Wide
DESIRABLE
Head
(narrow and long)
Long
UNDESIRABLE

CAREER OPPORTUNITIES IN PRODUCTION AGRICULTURE
UNIT X
TEST

1. Match the terms on the right to the correct definitions.

____ a. Father of offspring

____ b. Lets light through

____ c. Person involved in production of fruits and nuts

____ c. Producing several products instead of just one

____ e. Producer who uses land belonging to another and pays for its use by giving owner a share of crop

____ f. Neutered male cow

____ g. Mother of offspring

____ h. Special variety

____ i. Breed that has not been crossed with another breed

____ j. Course of continued progress in the life work of a person or progress through life in a series of related occupations or activities

____ k. Person who deals in the production of one item

____ l. Those operating units that produce food and fiber for the world

____ m. Female calf

____ n. Chopped stalks and other parts of plants used for winter feed

____ o. Eight to ten month old calf, doubling weight in 7½ months, and selling at 900 to 1000 lbs.

____ p. Producer who pays so much cash per acre and keeps all crops

____ q. Seed corn classified by shape of kernel, round or flat

1. Agricultural producers
2. Career
3. Crop share rent
4. Diversified production
5. Orchardist
6. Specialized producer
7. Sire
8. Dam
9. Pureblood lines
10. Heifer
11. Steer
12. Translucent
13. Feeder
14. Silage
15. Hybrid
16. Cash rent
17. Medium flat seed corn

2. List five qualities of an agricultural producer.

   a.

   b.

   c.

   d.

   e.

3. List four important events in the history of production agriculture.

   a.

   b.

   c.

   d.

4. List four facts about production agriculture in Nebraska.

   a.

   b.

   c.

   d.

5. Describe the types of farmers below.

   a. Tenant farmer

   b. Vacation farm operator (recreation farmer)

6. Describe the careers in production agriculture below.

   a. Livestock farmer and rancher

   b. Poultry farmer

7. Describe how to prepare for a production agriculture career.

8. Apply the rule to calculate the number of bushels of corn per acre.

   How many bushel of seed corn are needed to plant 10 acres of corn at 20,000 kernel per acre? There are 20,000 kernels per bushel. Show your work.

Demonstrate the ability to:

a. Candle eggs.

b. Grade feeder cattle.

CAREER OPPORTUNITIES IN PRODUCTION AGRICULTURE
UNIT X
ANSWERS TO TEST

1. a. 7

   b. 12

   c. 5

   d. 4

   e. 3

   f. 11

   g. 8

   h. 15

   i. 9

   j. 2

   k. 6

   l. 1

   m. 10

   n. 14

   o. 13

   p. 16

   q. 17

2. Any five of the following

   a. Requires more skills than past

   b. Enjoys working with plant and animals

   c. Has physical strength, stamina and good health

- d. Enjoys outdoors and variety of weather
- e. Likes to work alone
- f. Adjusts to irregular hours
- g. Has business and mechanical skills

3. Any four of the following
    - a. 95% of Colonial Americans were farmers
    - b. Wheat production began 400 B.C.
    - c. Mechanization developed in 1800
    - d. Population in farming has decreased from 10 million in 1950 to 3.5 million in 1980
4. Any four of the following
    - a. Nebraska ranks first in production of alfalfa meal
    - b. Nebraska ranks second in production of feeder cattle
    - c. Nebraska ranks sixth in production in sheep slaughter
    - d. Nebraska ranks sixth in hay production
    - e. In 1975 net income of Nebraska farmers was $17,613
5. Description should include:
    - a) Tenant farmer
        - 1) Similiar to owner-operator
        - 2) Differences in ownership
            - a) Cash rent
            - b) Crop-share rent
    - b) Vacation farm operator (recreation farmer)
        - 1) Farms owned by urban family
        - 2) Similiar to dude ranches
6. Description should include:
    - a. Livestock farmer and rancher
        - 1) Nature of work
            - a) Works with hogs, cattle, and sheep
            - b) Largest farms found in Nebraska
            - c) Buys livestock and feeds them to market weight

- 2) Working conditions
  - a) Vary with area and farm
  - b) Works in all weather
  - c) Works alone
  - d) Income is all at once
- 3) Education
  - a) High school education
  - b) Work experience needed
  - c) Post-secondary education
  - d) High school courses in vocational agriculture, feeds, and feeding

b. Poultry farmer
- 1) Nature of work
  - a) Raises chickens to sell eggs and broilers
  - b) Dixon county, largest numbers in Nebraska
- 2) Working conditions
  - a) Works with machinery
  - b) Works seven days a week
  - c) Odors and dust
- 3) Education
  - a) Knowledge of feeding and raising poultry
  - b) Work experience
  - c) High school education
  - d) Post-secondary education

7. Description should include:
   - a. Enroll in vocational agriculture
   - b. Join Future Farmers of America or 4-H
   - c. Obtain training at a university or at two-year technical school
   - d. Work on a ranch or farm during the summer
8. 10 acreas × 20,000 kernel per acre = 200,00 total kernels
   200,000 total kernels ÷ 20,000 = 10 bushels
9. Performance skills evaluated to satisfaction of instructor

CAREER OPPORTUNITIES IN AGRICULTURAL MECHANICS
UNIT XI

UNIT OBJECTIVE

After completion of this unit, the student should be able to list factors about agriculture mechanics, name job classifications and describe agricultural mechanics careers. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with careers in agricultural mechanics to the correct definitions.
2. List three factors about agricultural mechanics.
3. Distinguish between service and sales careers in agricultural mechanics.
4. Describe two agricultural mechanics careers.
5. Demonstrate the ability to:
    a. Change crankcase oil.
    b. Service spark plugs.
    c. Service dry-filter air cleaner.
    d. Service oil-filter air cleaner.

CAREER OPPORTUNITIES IN AGRICULTURAL MECHANICS
UNIT XI
SUGGESTED ACTIVITIES

I. Instructor:

   A. Provide students with objective sheet.

   B. Provide students with information and job sheets.

   C. Discuss unit and specific objectives.

   D. Discuss information sheets.

   E. Demonstrate and discuss procedures outlined in job sheets.

   F. Give test.

II. Student:

   A. Read objective sheet.

   B. Study information sheets.

   C. Demonstrate the ability to accomplish the procedures outlined in the job sheets.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

   A. Objective sheet

   B. Information sheets

   C. Transparency master: TM 1—Agricultural Mechanic

   D. Job sheets

      1. Job Sheet #1—Change Crankcase Oil

      2. Job Sheet #2—Service Spark Plugs

      3. Job Sheet #3—Service Dry-Filter Air Cleaner

      4. Job Sheet #4—Service Oil-Filter Air Cleaner

   E. Test

   F. Answers to test

II. Reference—Curtis, Samuel A., and Robert, Mercer J. *Exploring Occupations in Agribusiness and Natural Resources:* New York: Greg Division/McGraw Hill, 1976.

CAREER OPPORTUNITIES IN AGRICULTURAL MECHANICS
UNIT XI
INFORMATION SHEET

I. Terms and definitions

   A. Supplies—Items used in short periods of time

   B. Equipment—Items such as machinery

   C. Cover—Expression used to warn others to cover their eyes while a welder is welding

   D. Manual dexterity—Able to work easily with your hands

   E. Short course—Noncredit, intensive program at agricultural college

II. Agricultural mechanics facts

   A. 36,000 farm equipment dealers in United States

   B. Farmers spend $30 billion on equipment and service

   C. Farm equipment industry includes sales, service, and repair of equipment

III. Classifications of agricultural mechanics careers

   A. Service

      1. Repair person

      2. Mechanic

      3. Service person

      4. Shop supervisor

   B. Sales

      1. Bookkeeper

      2. Salesperson

      3. Parts manager

IV. Agricultural mechanics careers (Transparency 1)

   A. Agricultural machinery mechanic

      1. Nature of work

         a. Highly skilled

INFORMATION SHEET

      b. Specialized in a line of equipment
      c. Skilled in overhauling, hydraulic systems, repairs, and adjustments
      d. Expanding into lawn care equipment
   2. Working conditions
      a. Pleasant environment
      b. Farm trips are often
   3. Education
      a. High school education
      b. Post-secondary training in technical school

B. Agricultural machinery welder
   1. Nature of work
      a. Variety of welding

         Examples: Electric, oxyacetylene, spot, inert
      b. Often general shop welder
      c. Skilled in all types of welding
   2. Working conditions
      a. Indoors or outdoors
      b. Lighting and ventilation adequate
      c. Regular work, 40-hour week
   3. Education
      a. High mechanical skill
      b. High school and technical school degree

C. Agricultural machinery parts helper
   1. Nature of work
      a. Works with parts and supplies

INFORMATION SHEET

    b. Sells parts over counter
    c. Receives supplies and stocks shelves

  2. Working conditions
    a. Usual hours working in a store
    b. All indoors

  3. Education
    a. High school education
    b. Background in English, business, accounting, bookkeeping

D. Agricultural machinery service center merchant

  1. Nature of work
    a. Checks job tickets
    b. Keeps records of parts used
    c. Organizes work of mechanics

  2. Working conditions
    a. Indoors
    b. Work steady

  3. Education
    a. Work up occupational ladder

E. Agricultural machinery salesperson

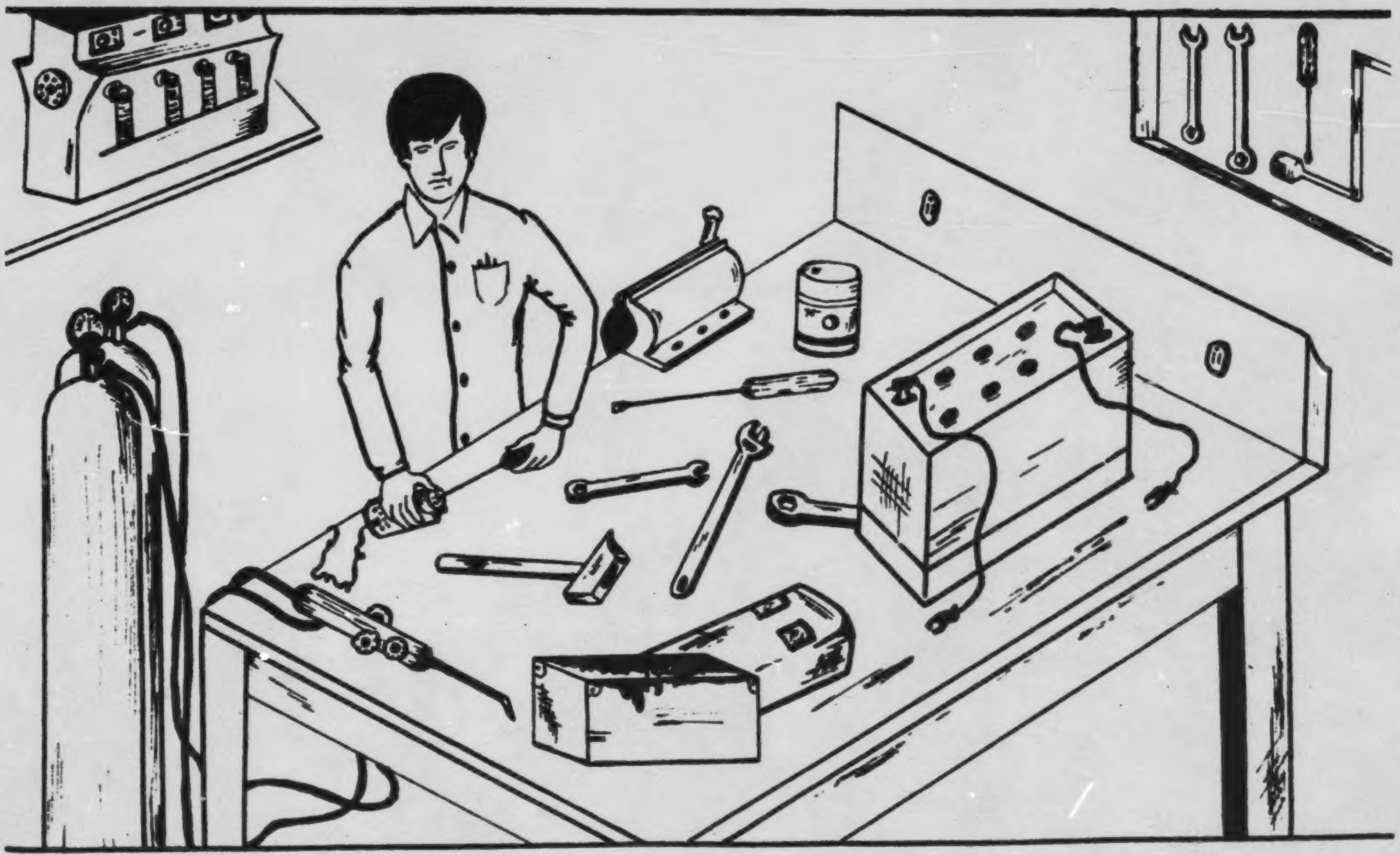
  1. Nature of work
    a. Sells new and used equipment
    b. Requires traveling
    c. Calls on prospective customers

INFORMATION SHEET

- d. Writes up terms
- e. Collects bills

2. Work conditions
   - a. Time spent traveling
   - b. Irregular hours
3. Education
   - a. High school education
   - b. English, drama, and leadership classes

AGRICULTURAL MECHANIC



TM 1

CAREER OPPORTUNITIES
IN AGRICULTURAL MECHANICS
UNIT XI

JOB SHEET #1—CHANGE CRANKCASE OIL

I. Equipment

   A. Clean rags

   B. Open-end wrenches

   C. Funnel or oil measure

   D. Oil

   E. Drain pan

   F. Coveralls

II. Procedure

   A. Start and operate engine until warmed up

   B. Stop engine

   C. Remove spark plug wire from plug

   D. Clean dirt from around drain plug

   E. Remove drain plug and drain oil

   F. Replace drain plug

   G. Refill crankcase with new oil

   H. Connect spark plug wire

   I. Start engine

   J. Recheck oil level

CAREER OPPORTUNITIES
IN AGRICULTURAL MECHANICS
UNIT XI

JOB SHEET #2—SERVICE SPARK PLUGS

I. Equipment

A. 3/4" or 13/16" spark plug deep socket

B. T-handle or ratchet drive

C. Wire feeler guage

D. Ignition file

E. Wire brush

F. Pen knife

G. Solvent (mineral spirits, kerosene)

H. Small paint brush

I. Clean rags

II. Procedure

A. Disconnect spark plug wire from plug terminal

B. Loosen plug one or two turns

C. Remove dirt from around spark plug base

D. Remove spark plug and gasket

E. Check condition of plug

F. Clean plug

G. File electrodes

H. Set plug gap

I. Replace gasket and plug

J. Reattach spark plug wire to plug terminal

CAREER OPPORTUNITIES
IN AGRICULTURAL MECHANICS
UNIT XI

JOB SHEET #3—SERVICE DRY-FILTER AIR CLEANER

I. Equipment

   A. Standard screwdrivers, 4" and 6"

   B. Phillips screwdrivers, 4" and 6"

   C. Clean rags

   D. Pressurized air

II. Procedure

   A. Disconnect spark plug wire

   B. Clean area around air cleaner

   C. Remove filter element cover

   D. Remove air filter element

   E. Cover carburetor air intake with cloth or plastic

   F. Check condition of filter element and other parts

   G. Clean air filter element

   (NOTE: If filter element is paper, clean by tapping it on a flat surface.)

   (CAUTION: Do not wash it unless instructed to do so by the manufacturer.)

   H. Remove protective cover from carburetor intake

   I. Clean filter cover and carburetor intake

   J. Replace filter element

   K. Replace cover

   L. Reconnect spark plug wire

CAREER OPPORTUNITIES
IN AGRICULTURAL MECHANICS
UNIT XI
JOB SHEET #4—SERVICE OIL-FILTER AIR CLEANER

I. Equipment

  A. Standard screwdrivers, 4" and 6"

  B. Phillips screwdrivers, 4" and 6"

  C. Container for washing parts

  D. Clean rags

  E. Soap

  F. Paint brush

  G. Pressurized air

II. Procedure

  A. Disconnect spark plug wire

  B. Clean area around air cleaner

  C. Remove filter element cover

  D. Remove filter element

  E. Check condition of filter element and other parts of air cleaner

  F. Cover carburetor air intake

  G. Clean filter

  H. Dry filter element

  I. Remove protective cover from carburetor intake

  J. Clean carburetor intake

  K. Oil filter element with few drops of oil

  L. Install filter element

  M. Install cover

  N. Reconnect spark plug wire

C-303-A

CAREER OPPORTUNITIES IN AGRICULTURE MECHANICS
UNIT XI

TEST

1. Match the terms on the right to the correct definitions.

____ a. Able to work easily with your hands

____ b. Items such as machinery

____ c. Noncredit, intensive program at agricultural college

____ d. Items used in short periods of time

____ e. Expression used to warn others to cover their eyes while a welder is welding

1. Supplies
2. Equipment
3. Cover
4. Manual Dexterity
5. Short course

2. List three factors about agricultural mechanics.

a.

b.

c.

3. Distinguish between service (SE) and sales (SA) careers in agricultural mechanics. Write the correct letters in the blanks provided.

____a. Bookkeeper

____b. Repair person

____c. Service person

____d. Shop supervisor

____e. Salesperson

____f. Mechanic

____g. Parts manager

4. Describe the two agricultural mechanics careers listed below.

a. Agricultural machinery mechanic

1) Nature of work

2) Working conditions

3) Education

b. Agricultural machinery welder

1) Nature of work

2) Working conditions

3) Education

5. Demonstrate the ability to:
   a. Change crankcase oil.
   b. Service spark plugs.
   c. Service dry filter air cleaner.
   d. Service oil filter air cleaner.

CAREER OPPORTUNITIES
IN AGRICULTURE MECHANICS
UNIT XI

ANSWERS TO TEST

1. a. 4

    b. 2

    c. 5

    d. 1

    e. 3

2. a. 36,000 farm equipment dealers in United States

    b. Farmers spend 30 billion on equipment and service

    c. Farm equipment industry includes sales, service, and repair of equipment

3. a. SA

    b. SE

    c. SE

    d. SE

    e. SA

    f. SE

    g. SA

4. Description should include:

    a. Agricultural machinery mechanic

        1) Nature of work

            a) Highly skilled

            b) Specialized in a line of equipment

            c) Skilled in overhauling, hydraulic systems, repairs, and adjustments

            d) Expanding into lawn care equipment

        2) Working conditions

            a) Pleasant environment

            b) Farm trips are often

- 3) Education
  - a) High school education
  - b) Post-secondary training in technical school

- b. Agricultural machinery welder
  - 1) Nature of job
    - a) Variety of welding
    - b) Often general shop welder
    - c) Skilled in all types of welding
  - 2) Working conditions
    - a) Indoors or outdoors
    - b) Lighting and ventilation adequate
    - c) Regular work, 40-hour week
  - 3) Education
    - a) High mechanical skill
    - b) High school and technical school degree

5. Performance skills evaluated to satisfaction of instructor.

CAREER OPPORTUNITIES IN AGRICULTURAL PROCESSING
UNIT XII

UNIT OBJECTIVE

After completion of this unit, the student should be able to describe major occupations in agricultural processing. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with careers in agricultural processing to the correct definitions.
2. Describe three careers in agricultural processing.
3. Demonstrate the ability to:
    a. Test cleaning solution.
    b. Develop fruit drink.
    c. Perform moisture test.
    d. Perform germination test.

CAREER OPPORTUNITIES IN AGRICULTURAL PROCESSING
UNIT XII
SUGGESTED ACTIVITIES

I. Instructor:

   A. Provide students with objective test.

   B. Provide students with information and job sheets.

   C. Make transparencies.

   D. Discuss unit and specific objectives.

   E. Discuss information sheet.

   F. Demonstrate procedures outlined in job sheets.

   G. Give test.

II. Students:

   A. Read objectives sheet.

   B. Study information sheets.

   C. Demonstrate the ability to accomplish the procedures outlined in the job sheets.

   D. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

   A. Objective sheet

   B. Information sheets

   C. Transparency master: TM 1—Meat Cutter

   D. Job sheets

      1. Job Sheet #1—Test Cleaning Solution

      2. Job Sheet #2—Develop Fruit Drink

      3. Job Sheet #3—Perform Moisture Test

      4. Job Sheet #4—Perform Germination Test

E. Test

F. Answers to test

II. References:

A. Curtis, Samuel M., and Mercer, Robert J. *Exploring Occupations in Agribusiness and Natural Resources.* New York: New York, Gregg Division/McGraw Hill, 1976.

B. Hoover, Norman K. *Handbook of Agricultural Occupations.* Danville, Illinois: The Interstate Printers and Publishers, Inc., 1964.

CAREER OPPORTUNITIES IN AGRICULTURAL PROCESSING
UNIT XII
INFORMATION SHEET

I. Terms and definitions

- A. Elevator—A Large building for storage of grain
- B. Moisture content—Amount of water in kernels of grain
- C. Processing—Activities that change or refine the original products into varied food and fiber products available for use
- D. Distributing—All activities involved in moving both original and refined products
- E. Exporters—Those who sell grain to other countries

II. Careers in agricultural processing

- A. Egg grader
  - 1. Nature of work
    - a. Candles eggs into grades
    - b. Works for buyers or marketing cooperatives
    - c. Candles 120 cases per hour

      (NOTE: Eggs are automatically sized and packed.)
  - 2. Working conditions
    - a. Work done inside darkened rooms
    - b. Eight hour day
  - 3. Education
    - a. High school education
    - b. Understanding of various parts of an egg
    - c. Work at routine tasks
    - d. Work as a team with people
- B. Meat cutter (Transparency 1)
  - 1. Nature of work
    - a. Prepares meat, fish, and poultry

INFORMATION SHEET

b. Wholesale cutter breaks down carcass into quarter and retail cuts

c. Packages and prices meat

2. Working conditions

   a. Well-lighted and ventilated

   b. Hazardous work with sharp instruments

   c. Sudden temperature changes

3. Education

   a. High school education

   b. Vocational training

   c. High school courses in animal science

   d. Must work 2 to 3 years as an apprentice

C. Meat grader

1. Nature of work

   a. Grades carcasses of beef, lamb, and veal to USDA grades

   b. Employed by U.S. Department of Agriculture packing plants or food store chain

2. Working conditions

   a. Works in cooler

   b. Forty-hour week

   c. Works standing

3. Education

   a. Must pass civil service examine

   b. College degree needed

   c. English and mathematics needed

D. Fruit and vegetable inspection employee

1. Nature of work

   a. Experience leads to employment in various areas

   b. Employment of bureaus of plant industries in Department of Agriculture of state and federal government

INFORMATION SHEET

  - c. Visits shipping and terminal points
  - d. Explains standard grade and procedure of bureau
- 2. Working conditions
  - a. Outdoor work and travel required
  - b. Seasonal work
- 3. Education
  - a. Varies
  - b. Meet people easily
  - c. Good background in english

E. Grain elevator manager

- 1. Nature of work
  - a. Supervises employees
  - b. Covers all phases of business
  - c. Must know grain, grain handling, blending, commodity markets, and relationship between each and future prices
- 2. Working conditions
  - a. Indoor and outdoor work
  - b. Year-round work; long hours
  - c. Around grain dust
- 3. Education
  - a. High school education and college degree
  - b. English, mathematics, business, sales, economics, and agriculture important
  - c. Need work experience
  - d. Must have confidence in yourself

F. Dairy plant employee

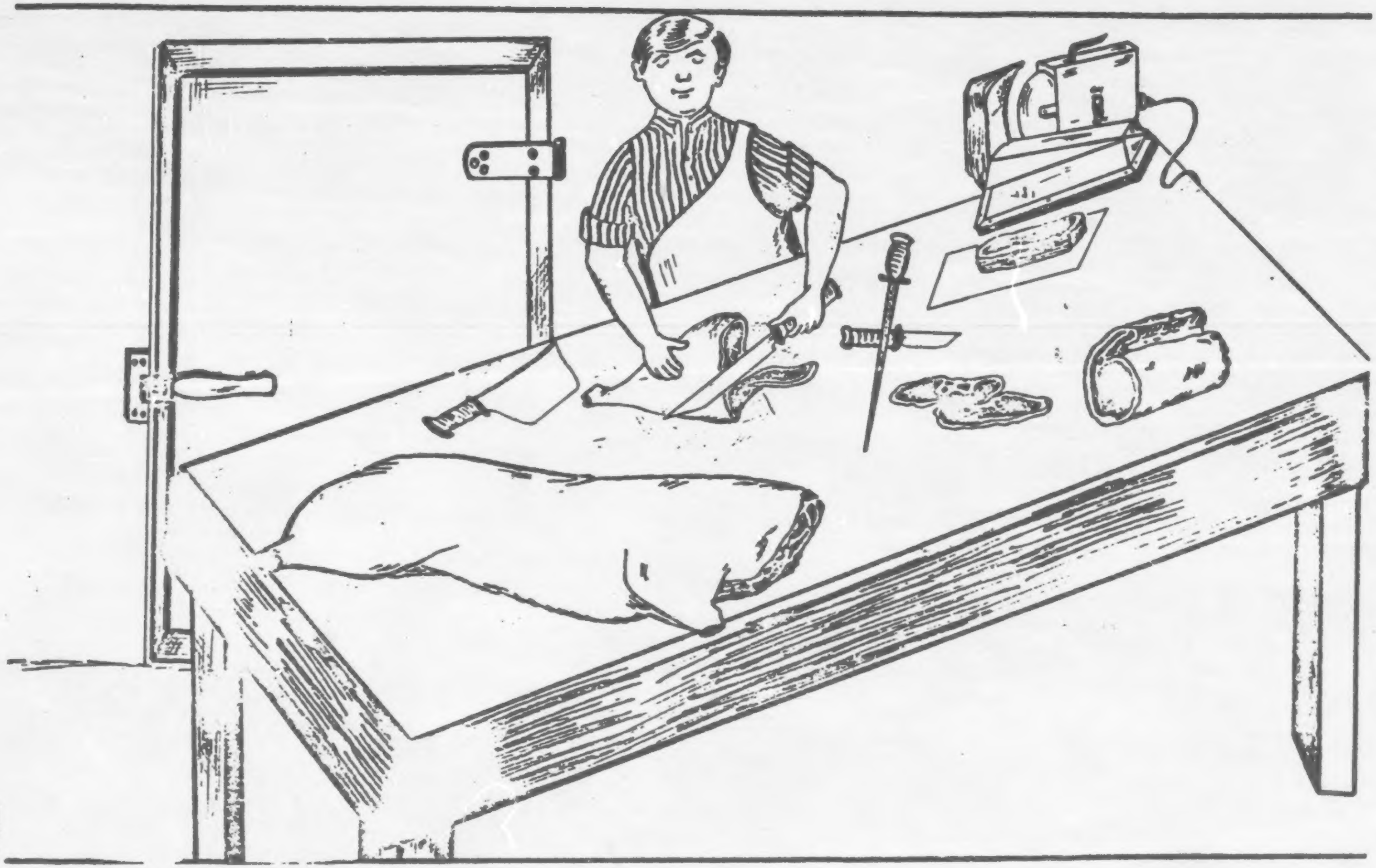
- 1. Nature of work

INFORMATION SHEET

   - a. Helps process milk
   - b. Maintains dairy plant equipment
   - c. Starts as a general helper

2. Working conditions
   - a. Indoor work
   - b. Equipment and floor is wet
   - c. Work is steady throughout year
3. Education
   - a. Vocational agriculture and farm experience
   - b. Neat, clean, and reliable
   - c. Good health

MEAT CUTTER



TM 1

C-317-A

CAREER OPPORTUNITIES IN AGRICULTURAL PROCESSING
UNIT XII
JOB SHEET #1—TEST CLEANING SOLUTION

I. Equipment

- A. Sample of cleaning solution (prepared by teacher)
- B. Iodine-chlorine test kit
- C. Paper and pencil

II. Procedure

- A. Rinse plastic vial from test kit with cleaning solution
- B. Pour 9 millimeters of cleaning solution into plastic vial
- C. Add 5 drops of potassium chlorine into plastic vial
- D. Observe for orange color

  (NOTE: If orange appears, chlorine is present.)
- E. Rinse plastic vial from test kit with cleaning solution
- F. Add 9 millimeters of cleaning solution to plastic vial
- G. Add 5 drops of phosphoric acid
- H. Observe for green color
- I. Add 5 drops of starch indicator to solution in vial
- J. Mix chemicals
- K. Add N/20 thiosulfate solution a drop at a time until clear
- L. Mix after every drop
- M. Record number of drops needed
- N. Repeat procedure for second sample

Number of drops of N/20 _____ × 10 = _______

Number of drops of N/200_____ × 1.0= _______

total PPM of Chlorine_______

CAREER OPPORTUNITIES
IN AGRICULTURAL PROCESSING
UNIT XII
JOB SHEET #2—DEVELOP FRUIT DRINK

I. Equipment

   A. Drinking glasses, 5

   B. Small paper cups, 8

   C. Grease pencil

   D. Measuring spoons: tablespoons and teaspoons

   E. Measuring cup, 2 cup

   F. Water

   G. Grape juice, 4 tablespoons

   H. Fresh lemon juice, 4 tablespoons

   I. Pineapple juice, 4 tablespoons

   J. Infusion of tea, 4 tablespoons

   (NOTE: This is ½ teaspoon instant tea mixed with four tablespoons of water.)

   K. Roll of paper towels

   L. Paper

   M. Pencil

II. Procedure

   A. Label cups A, B, C, D, E

   (NOTE: Use grease pencil to write letters on outside of drinking glasses.)

   B. Measure ¾ cup grape juice

   C. Add ¾ cup of water

   D. Pour ¼ cup diluted grape juice into each glass

   E. Do not add anything else to sample A

   F. To sample B add 2 tablespoons of fresh lemon juice

   G. To sample C add 4 tablespoons of pineapple juice and 2 tablespoons of lemon juice

   H. To sample D add 4 tablespoons of orange juice

   I. To sample E add 4 tablespoons of infusion tea

JOB SHEET #2

J. Count the number of color changes in each sample

K. Have four classmates rate the color of each

L. Have four classmates rate the taste of all four

M. Total the points

Sample	Number of Color Changes	Color					Taste				
		1	2	3	4	Totals	1	2	3	4	Total
A											
B											
C											
D											
E											

Score chart

Like it very much	4 points
Like it a little	3 points
Neither like nor dislike it	2 points
Dislike it a little	1 point
Dislike it very much	0 points

CAREER OPPORTUNITIES
IN AGRICULTURAL PROCESSING
UNIT XII

JOB SHEET #3—PERFORM MOISTURE TEST

I. Equipment

- A. Skuttle model MT2 Electronic Grain Moisture Tester
- B. 1 quart of corn
- C. Sheet of paper
- D. Pencil

II. Procedure

- A. Check that tester is operating correctly
- B. Check battery
- C. Turn dial labeled corn
- D. Set moisture dial on moisture tester in center at 0
- E. Place sample of corn into grain compartment
- F. Fill compartment
- G. Tap test ten times on table top
- H. Fill compartment
- I. Press (push to test) button with left hand
- J. Slowly rotate center knob clockwise with right hand
- K. Watch meter hand at right; stop when it registers lowest reading
- L. Read moisture content on center dial, the number opposite white mark
- M. Check temperature

  (NOTE: Allow 3 minutes)

N. Adjust moisture content according to temperature and moisture

Seed	Sample No.	Moisture Reading	Temperature	Adjusted Moisture	Examination for Foreign Objects

CAREER OPPORTUNITIES
IN AGRICULTURAL PROCESSING
UNIT XII

JOB SHEET #4—PERFORM GERMINATION TEST

I. Equipment

  A. Seed corn (100 Seeds)

  B. Two pieces of blotting paper, 8 by 10 inches

  C. Cake pan, 8 by 10 inches

  D. Water

  E. Plastic wrap

II. Procedure

  A. Place blotting paper on bottom of cake pan

  B. Add water

  C. Count 100 seeds

  D. Place seeds in row

  E. Wet a second blotting paper

  F. Cover seeds in pan

  G. Store in room temperature of 68° to 85°F

  H. Place plastic wrap over pan

  I. Check every day

  J. Count germinated seeds after 7 to 10 days

CAREER OPPORTUNITIES IN AGRICULTURAL PROCESSING
UNIT XII

TEST

1. Match the terms on the right to the correct definitions.

    ____ a. All activities involved in moving both original and refined products

    ____ b. Large building for storage of grain

    ____ c. Activities that change or refine the original products into varied food and fiber products available for use

    ____ d. Those who sell grain to other countries

    ____ e. Amount of water in kernels of grain

    1. Elevator
    2. Moisture content
    3. Processing
    4. Distribution
    5. Exporters

2. Describe the careers in agricultural processing listed below.

    a. Egg grader

        1. Nature of work

        2. Working conditions

        3. Education

b. Meat cutter

   1. Nature of work

   2. Working conditons

   3. Education

c. Grain elevator manager

   1. Nature of work

   2. Working conditions

   3. Education

3. Demonstrate the ability to:

   a. Test cleaning solution.

   b. Develop fruit drink.

   c. Perform moisture test.

   d. Perform germination test.

CAREER OPPORTUNITIES IN AGRICULTURAL PROCESSING
UNIT XII

ANSWERS TO TEST

1. a. 4
   b. 1
   c. 3
   d. 5
   e. 2
2. Description should include:
   a. Egg grader
      1) Nature of work
         a) Candles eggs into grades
         b) Works for buyers or marketing cooperatives
         c) Candles 120 cases per hour
      2) Working conditions
         a) Work done inside darkened rooms
         b) Eight hour day
      3) Education
         a) High school education
         b) Understanding of various parts of an egg
         c) Work at routine tasks
         d) Work as a team with people
   b. Meat cutter
      1) Nature of work
         a) Prepares meat, fish, and poultry

        - b) Wholesale cutter breaks down carcass into quarter and retail cuts
        - c) Packages and prices meat
    - 2) Working conditions
        - a) Well-lighted and ventilated
        - b) Hazardous work with sharp instruments
        - c) Sudden temperature changes
    - 3) Education
        - a) High school education
        - b) Vocational training
        - c) High school courses in animal science
        - d) Must work 2 to 3 years as an apprentice
- c. Grain elevator manager
    - 1) Nature of work
        - a) Supervises employees
        - b) Covers all phases of business
        - c) Must know grain, grain handling, blending, commodity markets, and relationship between each and future prices
    - 2) Working conditions
        - a) Indoor and outdoor work
        - b) Year-round work; long hours
        - c) Around grain dust
    - 3) Education
        - a) High school education and college degree
        - b) English, mathematics, business, sales, economics, and agriculture important
        - c) Need work experience
        - d) Must have confidence in yourself

3. Performance skills evaluated to satisfaction of instructor.

ORIENTATION TO VOCATIONAL AGRICULTURE
UNIT I

UNIT OBJECTIVE

After completion of this unit, the student should be able to match terms associated with vocational agriculture to the proper definition and discuss the importance of vocational agriculture in his/her future as well as the opportunities for personal development offered by vocational agriculture and the FFA. The student should also be able to describe his/her responsibilities as a vocational agriculture student. This knowledge will be evidenced by scoring eighty-five percent on a unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with orientation to vocational agriculture to their correct definition.
2. List three reasons for studying vocational agriculture.
3. List the responsibilities of being a student in vocational agriculture.
4. List five groups of people that vocational agriculture trains and serves.
5. List three activities in which FFA members can participate.
6. Select from a list the areas to be covered (studied) in Vocational Agriculture I.
7. Match the proper description and/or activity with the FFA contest.
8. Match the requirements for the various FFA degrees with the degree.
9. List four major awards areas available through the FFA awards program and ten specific awards included in these areas.
10. Select from a list the types of projects most commonly exhibited at fairs and shows by FFA members.
11. Prepare a list of the more important agricultural enterprises in your home community.

ORIENTATION TO VOCATIONAL AGRICULTURE
UNIT I

SUGGESTED ACTIVITIES

I. Instructor:

   A. Provide students with objective sheet.

   B. Provide students with information sheet.

   C. Discuss unit and specific objectives.

   D. Discuss information and assignment sheets.

   E. Advise students about due date for applications.

   F. Give test.

II. Student:

   A. Read objective sheet.

   B. Study information sheet and take additional notes.

   C. Complete assignment sheet.

   D. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

   A. Objectives

   B. Information sheet

   C. Assignment Sheet #1 List of Important Agricultural Enterprises in Community

   D. Test

   E. Answers to test

II. References:

   A. *Agriculture Is More Than Farming,* prepared by the American Association of Teacher Educators in Agriculture, the National Association of Agricultural Education Supervisors, and the National Vocational Agricultural Teacher's Association, Inc., The Future Farmers Supply Service, Alexandria, Virginia.

B. Stone, Archie A. *Agribusiness and Industry*. Danville, Illinois: Interstate Printers and Publishers, 1965.

C. *Nebraska FFA Contests and Activities*. Lincoln, Nebraska: State of Nebraska, Department of Education, Vocational Agriculture Section, 301 Centennial Mall South.

D. *Nebraska FFA Association Constitution and Bylaws*. (Available from Executive Secretary, Nebraska Association, Future Farmers of America, 301 Centennial Mall South, Lincoln, Nebraska 68509.)

E. Krebs, Alfred H. *Agriculture in Our Lives*. Danville, Illinois: Interstate Printers and Publishers, 1972.

F. *Official Manual*, Future Farmers of America, Alexandria, Virginia, 1976.

G. *Nebraska Agricultural Statistics*. Nebraska Department of Agriculture, State-Federal Division of Agricultural Statistics, 211 Federal Building, Box 81069, Lincoln, Nebraska 68501.

ORIENTATION TO VOCATIONAL AGRICULTURE
UNIT I

INFORMATION SHEET

I. Terms and definitions

   A. Vocational agriculture--Training program to teach young people about the science of agriculture and/or agricultural related occupations and to prepare them for furthering their education or entry into the world of work

   B. Agriculture--Science or art of cultivating the soil, producing crops, raising livestock, and all other aspects created as these products move from producer to consumer

   C. Agricultural related occupations (Agribusiness)--Those operating units that support production agriculture in such ways as marketing, processing, and servicing

   D. Future Farmers of America (FFA)--An organization of national scope for students enrolled in vocational agriculture programs designed to provide training in leadership, citizenship, and cooperation and to complement the total program

II. Reasons for studying vocational agriculture

   A. Importance of national food supply

   B. Awareness of nation's economy

   C. Daily use of farm products

   D. Understanding of agricultural related businesses

   E. Choice of an occupation

   F. Wise usage of our natural resources

   G. (Agricultural statistics to be completed by local department)

   (NOTE: The nature of today's agriculture requires that students be trained in the sciences dealing with animals, plants, and soils, as well as principles of breeding, feeding, disease, and insect control. In every school, instruction is prepared so that it meets the needs of students. Whatever a student ultimately decides to do, the willingness to accept responsibility and to make decisions based on what has been learned in vocational agriculture will be of value.)

III. Responsibilities of vocational agriculture students

   A. Attend classes

INFORMATION SHEET

- B. Carry on a supervised occupational experience program
    - 1. Actual "hands on" type of experiences
    - 2. Real life experiences
    - 3. Learn by doing

    (NOTE: It is this aspect of vocational agriculture that makes it vocational in nature. By having a farming program or gaining work experience in an agricultural business, students become acquainted with the world of work and begin to recognize the importance of preparing for a vocation.)

- C. Become an active member of the Future Farmers of America
- D. ______________________ (To be completed by local schools)

IV. Groups that vocational agriculture trains and serves

- A. High school students planning to farm
- B. High school students planning to work in agricultural-related occupations
- C. High school students preparing to further their education in agriculture
- D. Young adults establishing themselves in farming, ranching, and/or agribusiness
- E. Farmers, ranchers, and/or agribusiness personnel improving their operations

V. FFA activities

- A. FFA meetings
- B. Committee work
- C. Leadership conferences
- D. Contests
- E. Livestock shows and fairs
- F. State and national conventions
- G. Parent-Member banquet
- H. Field trips
- I. Local, state, and national awards
- J. Recreation

VI. Major areas of instruction for Vocational Agriculture I

- A. Orientation and careers
    - 1. Agriculture occupations
    - 2. Choosing your career

INFORMATION SHEET

B. Leadership

    1. Future Farmers of America

    2. Parliamentary procedure

    3. Public speaking

C. Supervised occupational experience program

    1. Exploring areas of interest

    2. Goals

    3. Beginning record keeping

D. Animal science

    1. Livestock industry

    2. Breeds of livestock

    3. Livestock selection

    4. Livestock feeding

E. Plant and soil science

    1. Plant and seed identification

    2. Importance of crop production

F. Agricultural mechanics

    1. Orientation

    2. Fasteners

    3. Arc welding

    4. Gas welding

    5. Farm safety

VII. Contests for the Vocational Agriculture students

A. Vocational Agriculture contests

    1. Livestock Selection--Ability to select animals for breeding and marketing purposes

INFORMATION SHEET

2. Agronomy--Ability of identifying crops, weeds and soils and answer questions on crop and soil management
3. Livestock Management--Ability to answer questions covering nutrition, feeding, breeding, and management of dairy, beef, sheep, and swine
4. Poultry Management--Ability to answer questions covering poultry production
5. Meat Judging and Identification--Ability to identify meat cuts and evaluate carcasses
6. Milk Quality and Dairy Foods--Ability to evaluate and identify dairy products and equipment
7. Farm Management--Ability to answer questions on economics and solve typical farm management problems
8. Dairy Cattle Selection--Ability to select cattle for production
9. Home Horticulture--Ability to identify horticultural plants and answer questions covering horticultural management
10. Tractor Maintenance--Ability to perform maintenance operations and answer questions covering farm tractors
11. Farm Machinery--Ability to align, calibrate, operate, and service farm machinery and answer questions covering machinery topics
12. Metals--Ability to properly use the arc and oxy-acetylene welders
13. Soil and Water Management--Ability to demonstrate skills with survey instruments and answer questions covering soil and water management
14. Farm Wiring--Ability to perform skills necessary for farm wiring.
15. Agricultural Mechanics--Ability to solve problems, perform mechanical skills, and answer written questions covering agricultural mechanical area

B. FFA Contests

1. Chapter Procedure Contest--Ability to transact the business of a meeting in an orderly manner
2. Agricultural Demonstration--Ability to advance agricultural technology through telling and doing

INFORMATION SHEET

3. Creed Speaking--Ability Greenhand to interpret and deliver the FFA Creed in a confident and convincing manner

4. Extemporaneous Speaking--Ability to express themselves on a given subject with minimum preparation

5. Public Speaking--Ability to prepare and deliver a speech on an agricultural topic

6. Wildlife Speaking--Ability to prepare and deliver a speech on a wildlife topic

7. Tractor Operators Contest--Ability to demonstrate skill in safe tractor operation

8. Chapter Books and Records Contests--Ability to properly complete and maintain SOEP Record Books, Secretary's book, Treasurer's book and Chapter Scrap book

9. Crop Production Contests--Ability to apply approved practices in achieving maximum crop yields and quality (NCIA and AK-SAR-BEN)

10. AK-SAR-BEN Livestock Production Award--Ability to promote and increase understandings in livestock production

11. AK-SAR-BEN Farm Betterment Award--Ability to improve the scope and quality of the farm betterment program

12. Land Judging Contest--Ability to evaluate soil, determine land capability classes, and recommend land use practices

13. Range Judging Contest--Ability to apply range management principles

14. Crops Judging Contest--Ability to identify and determine quality of grain samples

VIII. FFA degrees that can be earned

A. Greenhand Degree

1. Awarded by the local chapter signifying achievement of the first level of membership

2. Qualifications for the degree

a. Be enrolled in vocational agriculture

INFORMATION SHEET

   - b. Learn and explain the FFA Creed, Motto and Salute
   - c. Explain the proper use of the FFA jacket and blazer
   - d. Describe the FFA emblem, colors and symbols
   - e. Know the history of the organization
   - f. Know the duties and responsibilities of FFA members
   - g. Have an FFA Manual
   - h. Submit written application

B. Star Greenhand--Awarded by the local chapter to the most outstanding Greenhand

C. Chapter Farmer Degree

   1. Awarded by the local chapter signifying achievement of the second level of membership

   2. Qualifications for the degree

      - a. Must have received the Greenhand Degree
      - b. Must have completed one semester of instruction in vocational agriculture and have satisfactory scholastic record in this course
      - c. Must have earned at least $50 from a supervised training program or worked 50 hours in case of laboratory or agribusiness
      - d. Be familiar with local, state, national constitution, purposes, and program activities
      - e. Demonstrate five parliamentary procedure abilities
      - f. Be able to lead a group discussion for fifteen minutes
      - g. Receive a majority vote
      - h. Demonstrate achievement in an Agricultural Proficiency Award area
      - i. Submit application
      - j. Meet local chapter requirements

INFORMATION SHEET

D. Star Chapter Farmer and/or Star Chapter Agribusiness--Awarded at the local level to the most outstanding member in the chapter in the respective area

E. State Farmer Degree (Agribusiness Degree)

  1. Awarded to the top 2½% of the FFA members in the state each year in the ratio of the applications submitted

  2. Qualifications for the degree

    a. Must have chapter Farmer Degree

    b. Must have been in the FFA for at least two years

    c. Must have earned and invested $500 from a supervised training program or have worked at least 600 hours in directed experience program, or a combination thereof

    d. Demonstrate leadership ability by performing ten parliamentary procedure activities, give a five-minute speech, and serve as an officer and/or committee chairman or member

    e. Have satisfactory scholastic record

    f. Participate in the planning and completion of chapter program of activities

    g. Participate in five FFA activities above the chapter level

    h. Pass an FFA test

    i. Meet other state requirements

F. Area Star Farmer and Area Star Agribusinessman

  1. One star farmer and one star agribusinessman for each area annually

  2. Awarded medals from AK-SAR-BEN

G. Star State Farmer and/or Star State Agribusinessman

  1. Awarded a certificate and a check for $200.00 from the national foundation

  2. Qualification--Must have received the State Farmer Degree

H. American Farmer Degree (American Agribusinessman)

INFORMATION SHEET

1. Awarded to the top FFA members in the nation
2. Qualifications for the degree
    a. Must have received the State Farmer Degree
    b. Must have been an active FFA member for at least 36 months
    c. Must have earned at least $1,000 from a supervised training program
    d. Must have been out of school 12 months

I. Regional Star Farmer and/or Regional Star Agribusinessman
    1. Selected from the American Farmer degree winners in the four regions
    2. Four Regional Star Farmer and Four Regional Star Agribusinessmen are named yearly in the United States
    3. Each are awarded $500.00

J. Star Farmer of America and Star Agribusinessman of America
    1. Outstanding FFA member in the nation
    2. Must have achieved the American Farmer Degree
    3. Awarded annually at the National FFA Convention
    4. Each is awarded an additional $500.00

IX. Awards available on the local, state, and national levels
  A. Individual Foundation Awards
    1. Agricultural Mechanics
    2. Soil and Water Management
    3. Dairy Production
    4. Crop Production
    5. Diversified Livestock Production
    6. Forestry Management

INFORMATION SHEET

7. Poultry Production
8. Agricultural Electrification
9. Placement in Sales and/or Services
10. Fish and Wildlife Management
11. Placement in Agricultural Production
12. Placement in Processing
13. FFA Public Speaking
14. Home and Farmstead Improvement
15. Ornamental Horticulture
16. Beef Production
17. Swine Production
18. Sheep Production
19. Outdoor Recreation
20. Horse Proficiency
21. Star Greenhand
22. Star Chapter Farmer
23. State Star Farmer-Agribusinessman
24. Star Farmer-Agribusinessman of America

B. Chapter Foundation Recognition Programs

1. Superior Awards--State level
2. Bronze, Silver, Gold--National level
3. Building Our American Communities--District, state, and national level
4. Farm Safety--State and national levels

C. Nebraska Awards for Chapters

INFORMATION SHEET

    1. AK-SAR-BEN Outstanding Chapter
    2. FFA Cooperatives Award
    3. FFA Natural Resources Award

  D. State Fair Awards

    1. Swine, Sheep, Beef, Dairy and Agricultural Mechanics Sweepstakes Trophies
    2. Showmanship Medals
    3. Block and Bridle Trophy

X. Common projects exhibited at fairs and shows

  A. Market steers and heifers
  B. Beef breeding
  C. Market swine
  D. Swine breeding
  E. Market lambs
  F. Sheep breeding
  G. Dairy
  H. Crops exhibits such as seeds or plants
  I. Mechanic exhibits

(NOTE: Students enrolled in vocational agriculture and the FFA have the opportunity to exhibit projects at livestock shows and fairs. Most all types of crops and livestock can be exhibited at the fairs and shows.)

ORIENTATION TO VOCATIONAL AGRICULTURE
UNIT I

ASSIGNMENT SHEET NO. 1--LIST OF IMPORTANT AGRICULTURAL ENTERPRISES IN COMMUNITY

Prepare a list of the more important agriculture enterprises in your community. (Discuss this with your instructor after the list is complete.)

ORIENTATION TO VOCATIONAL AGRICULTURE
UNIT I

TEST

1. Match terms on the right with their correct definition.

_____a. An organization of national scope for students enrolled in vocational agriculture programs designed to provide training in leadership, citizenship, and cooperation and to complement the total program

_____b. Those operating units that support production agriculture in such ways as marketing, processing, and servicing

_____c. Science or art of cultivating the soil, producing crops, raising livestock, and all other aspects created as these products move from producer to consumer

_____d. Training program to teach young people about the science of agriculture and/or agricultural related occupations and to prepare them for futhering their education or entry into the world of work

1. Vocational agriculture
2. Agriculture
3. Future Farmers of America
4. Agricultural related occupations (Agribusiness)

2. List three reasons for studying vocational agriculture.

a.

b.

c.

3. List the responsibilities of being a student in vocational agriculture.

a.

b.

c.

d.

4. List five groups of people that vocational agriculture serves and trains.

a.

b.

c.

d.

e.

5. List three activities in which FFA members can participate.

a.

b.

c.

6. Place an "X" by the areas to be covered in Vocational Agriculture I.

___ a. Library science

___ b. Agriculture mechanics

___ c. Chemicals

___ d. Careers

___ e. Leadership

___ f. Political science

___ g. Animal science

___ h. Plant science

___ i. Supervised occupational experience

___ j. Animal reproduction

7. Match the contests on the right with the proper descriptions and/or activities on the left.

___ a. Identifying trees

___ b. Land capability classes

1. Horticultural Judging

2. Chapter Books & Records Contest

___ c. Welding

___ d. Perform mechanical skills

___ e. Wiring

___ f. Surveying

___ g. Farm management problems

___ h. Cheese identification

___ i. A speaking contest for Greenhands only

___ j. Secretary's Book

3. Crops Judging
4. Dairy Cattle Selection
5. Metals Contest
6. Farm Management Contest
7. Farm Wiring Contest
8. Land Judging
9. Agricultural Mechanics Contest
10. Creed Speaking Contest
11. Milk Quality & Dairy Foods
12. Soil and Water Management Contest

8. Match the degree on the right with its proper set of requirements by placing the letter which represents that degree in the correct blank.

___ a.
  1) Awarded by local chapter signifying achievement of the first level of membership
  2) Be enrolled in vocational agriculture
  3) Learn and explain the FFA Creed
  4) Know the history of the FFA organization
  5) Submit a written application

___ b.
  1) Awarded to top FFA members in the nation
  2) Must have received the State Farmer Degree
  3) Must have been an active FFA member for at least 36 months

G=Greenhand

C=Chapter Farmer

S=State Farmer

A=American Farmer

4) Must have earned at least $1000 from a supervised experience program

___ c. 1) Awarded to top 2½% of the FFA members in the state each year

2) Must have been in the FFA for at least two years

3) Must have earned and invested at least $500 from a supervised experience program

4) Pass an FFA test

___ d. 1) Awarded by local chapter signifying achievement of the second level of membership

2) Must have received the degree of Greenhand

3) Must have completed one semester of instruction in vocational agriculture

4) Must have earned at least $50 from a supervised experience program

9. List four major award areas available through the FFA awards program, and list ten specific awards included in these areas.

a.	1.
	2.
b.	3.
	4.
c.	5.
	6.
d.	7.
	8.
	9.
	10.

10. Place an "X" by the projects most commonly exhibited at fairs and shows by FFA members.

___ a. Hot rod car

___ b. Market steers

___ c. Market horses

___ d. Market swine

___ e. Market sheep

___ f. Ewe lambs

___ g. Gilts

___ h. Heifers

___ i. Crops

___ j. Clothing

___ k. Dairy animals

___ l. Plants

___ m. Airplanes

___ n. Mechanics projects

11. Prepare a list of the more important agricultural enterprises in your community.

    (NOTE: If this has not been accomplished prior to the test, ask the instructor when the above activity should be completed.)

ORIENTATION TO VOCATIONAL AGRICULTURE
UNIT I

ANSWERS TO TEST

1. a. 3
   b. 4
   c. 2
   d. 1
2. Any three of the following
   a. Importance of national food supply
   b. Awareness of nation's economy
   c. Daily use of farm products
   d. Understanding of agricultural related businesses
   e. Choice of occupation
   f. Wise usage of our natural resources
3. a. Attend classes
   b. Carry on a supervised occupational experience program
   c. Become an active member of the Future Farmers of America
   d. (Local requirements)
4. a. High school students planning to farm
   b. High school students planning to work in agricultural-related occupations
   c. High school students preparing to further their education in agriculture
   d. Young adults establishing themselves in farming, ranching, and/or agribusiness
   e. Farmers, ranchers, and/or agribusinessmen improving their operations
5. Any three of the following
   a. FFA meetings
   b. Committee work
   c. Leadership conferences

- d. Contests
- e. Livestock shows and fairs
- f. State and national conventions
- g. Parent-Member banquets
- h. Field trips
- i. Local, state, and national awards
- j. Recreation

6. b, d, e, g, h, i
7. a. 1
   - b. 8
   - c. 5
   - d. 9
   - e. 7
   - f. 12
   - g. 6
   - h. 11
   - i. 10
   - j. 2
8. a. G
   - b. A
   - c. S
   - d. C
9. a. Individual Foundation Awards
   - b. Chapter Foundation Recognition Programs
   - c. Nebraska Awards for Chapters
   - d. State Fair Awards

Any ten of the following

1) Agricultural Mechanics
2) Soil and Water Management
3) Dairy Production
4) Crop Production
5) Diversified Livestock Production
6) Forestry Management
7) Poultry Production
8) Agricultural Electrification
9) Placement in Sales and/or Services
10) Fish and Wildlife Management
11) Placement in Agricultural Production
12) Placement in Processing
13) FFA Public Speaking
14) Home and Farmstead Improvement
15) Ornamental Horticulture
16) Beef Production
17) Swine Production
18) Sheep Production
19) Outdoor Recreation
20) Horse Proficiency
21) Star Greenhand
22) Star Chapter Farmer
23) Star State Farmer/Agribusinessman
24) Star Farmer/Agribusinessman of America
25) Superior Awards--State Level

26) Bronze, Silver, Gold--National level

27) Building Our American Communities--District, state and national levels

28) Farm Safety--State and national levels

29) AK-SAR-BEN Outstanding Chapter

30) FFA Co-operative Awards

31) FFA Natural Resources Award

32) Swine, Sheep, Beef, Dairy and Agricultural Mechanics Sweepstakes Award

33) Showmanship Medals

34) Block and Bridle Trophy

10. b, d, e, f, g, h, i, k, l, n

11. Evaluated to the satisfaction of the instructor

HUMAN RELATIONS
UNIT II

UNIT OBJECTIVE

After completion of this unit, the student should be able to distinguish between good and poor forms of behavior. The student should be able to classify traits that make one either pleasant or irritating to work with. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit of instruction, the student should be able to:

1. Match terms associated with human relations to the correct definition.
2. Name three rules to follow in becoming acquainted and accepted by a group.
3. Name three rules to follow when introducing others.
4. Select from a list of alternatives why most individuals are fired from their jobs.
5. Distinguish between good and poor forms of behavior.
6. Name two problems that may be created by the worker who is "just putting in his time."
7. Classify traits as either pleasant or irritating.

HUMAN RELATIONS
UNIT II

SUGGESTED ACTIVITIES

I. Instructor:
   A. Provide students with objective sheet.
   B. Provide students with information sheets.
   C. Discuss unit and specific objectives.
   D. Discuss information sheets.
   E. Give test.

II. Students:
   A. Read objectives.
   B. Study information sheets.
   C. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:
   A. Objectives
   B. Information sheets
   C. Test
   D. Answers to test

II. References:
   A. Wood-McKenna. The Receptionist. Dallas, Texas: Gregg Division, McGraw-Hill Book Company.
   B. Archer-Brecker-Frakes-Stewart. General Office Practice. Dallas, Texas: Gregg Division, McGraw-Hill Book Company.
   C. *Human Relations in Agricultural Business*. Urbana, Illinois: Vocational Agriculture Services, College of Agriculture, University of Illinois.

HUMAN RELATIONS
UNIT II

INFORMATION SHEET

I. Terms and definitions

   A. Human relations--The act of getting along with people

   B. Self-discipline--The ability to control one's self at all times

   C. Tact--The ability to express ideas and opinions so they do not insult others

   D. Courtesy--The well-mannered conduct toward others; treating others as you would like to be treated

   E. Respect--The regard for the other person, his property, and his opinions

   F. Honesty--One's truthfulness in all words and deeds

   G. Loyalty--The support for a cause

   H. Morale--A state of mind which reflects an individual's attitudes toward his job, fellow workers, and employers

   I. Compromise--A mutual agreement made by concession on both sides

II. Rules for becoming acquainted and accepted

   A. Be pleasant, cheerful, and friendly to everyone

   B. Proper appearance

   C. Take time to know the individuals before joining cliques

   D. Don't force yourself on others

   E. If invited, try company sponsored social groups and/or teams

III. Rules for introducing others

   A. Introduce man to woman

   B. Younger to older

   C. Prominent to less prominent

   (NOTE: Use a pleasant form of greeting and repeat the person's name. Example: Say, "How do you do, Mr. Jones," and smile.)

INFORMATION SHEET

IV. The reason ninety percent of the people are fired from their jobs--Inability to get along with others

V. Forms of behavior

   A. Good

      1. Accuracy
      2. Reliability
      3. Honesty
      4. Initiative
      5. Dependability

   B. Poor

      1. Disloyalty
      2. Inconsideration
      3. Excessive tardiness
      4. Carelessness
      5. Poor attitude

VI. Problems that may be created by the worker who is "just putting in his time"

   A. Low morale among other workers

   B. Costly to company

VII. Traits that are either pleasant or irritating

   A. Pleasant

      1. Sense of humor
      2. Tolerance
      3. Energy
      4. Enthusiasm
      5. Self-confidence

INFORMATION SHEET

6. Consideration for others
7. Doing more than your share

B. Irritating

1. Hums or whistles incessantly
2. Gossips
3. Chews gum or smokes thoughtlessly
4. Interrupts frequently
5. Uses foul language
6. Criticizes or belittles others
7. Says unkind things

HUMAN RELATIONS
UNIT II

TEST

1. Match the terms on the right to the correct definition.

    ______a. A mutual agreement made by concession on both sides

    ______b. The act of getting along with people

    ______c. A state of mind which reflects an individual's attitudes toward his job, fellow workers, and employers

    ______d. The ability to control one's self at all times

    ______e. The support for a cause

    ______f. The ability to express ideas and opinions so they do not insult others

    ______g. One's truthfulness in all words and deeds

    ______h. The well-mannered conduct toward others; treating others as you would like to be treated

    ______i. The regard for the other person, his property, and his opinions

    1. Respect
    2. Honesty
    3. Loyalty
    4. Morale
    5. Compromise
    6. Human relations
    7. Self-discipline
    8. Tact
    9. Courtesy

2. Name three rules to follow in becoming acquainted and accepted by a group.

    a.

    b.

    c.

3. Name three rules to follow when introducing others.

    a.

    b.

    c.

4. Select by placing an "X" in the blank which represents why most individuals lose their jobs.

______a. Not trained for the particular job

______b. Inability to get along with others

______c. Not interested in the work

______d. Late for work

5. Which of the following terms and statements indicate forms of good behavior? Place an "X" in the blank if the term is an indication of good behavior.

______a. Poor attitude

______b. Honesty

______c. Carelessness

______d. Initiative

______e. Accuracy

______f. Disloyalty

6. Name two problems that may be created by the worker who is "just putting in his time."

a.

b.

7. Classify the following traits as either pleasant or irritating. Place a "P" in the blank if the trait represents a pleasant trait or an "I" in the blank if it represents an irritating trait.

______a. Gossips

______b. Energy

______c. Sense of humor

______d. Uses foul language

______e. Self-confidence

______f. Criticizes or belittles others

______g. Doing more than your share

______h. Consideration for others

HUMAN RELATIONS
UNIT II

ANSWERS TO TEST

1. ___5___ a.

   ___6___ b.

   ___4___ c.

   ___7___ d.

   ___3___ e.

   ___8___ f.

   ___2___ g.

   ___9___ h.

   ___1___ i.

2. Any three of the following:

   a. Be pleasant, cheerful, and friendly to everyone

   b. Take time to know the individuals before joining cliques

   c. Don't force yourself on others

   d. If invited, try company sponsored social groups and/or teams

3. a. Introduce man to woman

   b. Younger to older

   c. Prominent to less prominent

4. b

5. b, d, e

6. a. Low morale among other workers

   b. Costly to company

7. ___I___ a.

   ___P___ b.

___P___ c.

___I___ d.

___P___ e.

___I___ f.

___P___ g.

___P___ h.

BECOMING A GOOD LEADER
UNIT III

UNIT OBJECTIVE

After completion of this unit, the student should be able to define leadership and list characteristics of a good leader. The student should be able to discuss the importance of being a good leader and list values of having leadership abilities. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Define leadership.
2. List five characteristics of a good leader.
3. Discuss in a short paragraph the importance of being a good leader.
4. Select from a list steps to take in order to become a good leader.
5. List five values of having leadership abilities.
6. List seven items in the FFA code of ethics.
7. Rate himself/herself as a leader after taking the Personality Self-Rating Scale.
8. Select leaders within the community, listing traits that make them leaders.

BECOMING A GOOD LEADER
UNIT III

SUGGESTED ACTIVITIES

I. Instructor:

  A. Provide student with objective sheet.
  B. Provide student with information sheet.
  C. Discuss unit and specific objectives.
  D. Discuss information and assignment sheets.
  E. Help evaluate the student according to the Personality Self-Rating Scale.
  F. Use outside resource persons knowledgeable in the area of leadership.
  G. Give test.

II. Student:

  A. Read objectives.
  B. Study information sheet and take notes.
  C. Complete assignment sheets.
  D. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

  A. Objectives
  B. Information sheet
  C. Assignment sheets
    1. Assignment Sheet #1--Personality Self-Rating Scale
    2. Assignment Sheet #2--Selecting Leaders Within Your Community
  D. Test
  E. Answers to test

II References:

A. *Official Manual.* Alexandria, Virginia: The Future Farmers of America, 1976.

B. Gray, Jarrell D. and J.R. Jackson. *Leadership Training and Parliamentary Procedure for FFA.* Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1958.

C. Wells, Kenneth A. *Becoming A Good Leader.* Chicago: Science Research Association, Inc., 1973.

BECOMING A GOOD LEADER
UNIT III

INFORMATION SHEET

I. Leadership--Combination of qualities which inspire confidence, draw others toward the leader, and cause them to follow

II. Characteristics of a good leader

  A. Faith in people and desire to work with them

  B. Poise and confidence

  C. Preplanning of the program so the meeting moves with dispatch

  D. Interested and alert

  E. Democratic in dealing with group members

  F. Fair and impartial

  G. Patient, optimistic, and gives credit for work done

  H. Sensitive to the individuals and recognizes individual differences

  I. Sense of humor to relieve the tension of a serious meeting

  J. Realization that his responsibility is to let others share responsibilities

  K. Belief in the organization

  L. Desire to be a team member

III. Importance of being a good leader

  A. Leadership needed in all fields

  B. Challenge to learn leadership

  C. Respect created for others

  D. Maturation of individual

IV. Steps in becoming a good leader

  (NOTE: Leaders are made, not born.)

  A. Study qualities of a good leader

  B. Evaluate strong and weak points of oneself

INFORMATION SHEET

- C. Become a good follower
- D. Develop a plan for training oneself as a leader

V. Values of having leadership abilities

- A. Education
- B. Respect
- C. Advancement in an occupation
- D. Financial betterment
- E. Pride
- F. Security

VI. FFA code of ethics

- A. Dress neatly and appropriately for the occasion
- B. Show respect for rights of others and be courteous at all times
- C. Be honest and do not take unfair advantage of others
- D. Respect the property of others
- E. Refrain from loud, boisterous talk, swearing, and horseplay
- F. Demonstrate sportsmanship in the show ring, judging contests, and meetings
- G. Be modest in winning and generous in defeat
- H. Attend meeting promptly and respect the opinions of others in discussion
- I. Take pride in the organization, activities, farming programs, exhibits, and the occupation of farming and ranching
- J. Share with others the experiences and knowledge gained by attending state and national meetings

BECOMING A GOOD LEADER
UNIT III

ASSIGNMENT SHEET NO. 1--PERSONALITY SELF-RATING SCALE

Circle the appropriate number following each trait. Four is outstanding, three is above average, two is average, one is poor. Total your score on the following page.

1.	Do I maintain a well-groomed appearance?	1	2	3	4
2.	Do I have a pleasing voice?	1	2	3	4
3.	Is my posture alert and poised?	1	2	3	4
4.	Is my disposition cheerful?	1	2	3	4
5.	Do I make friends easily?	1	2	3	4
6.	Do I exert a positive leadership?	1	2	3	4
7.	Am I generally thoughtful of the feelings of others?	1	2	3	4
8.	Is my enthusiasm sincere and contagious?	1	2	3	4
9.	Do I persevere until I achieve success?	1	2	3	4
10.	Am I sincere in my interest in other people?	1	2	3	4
11.	Am I ambitious to get ahead?	1	2	3	4
12.	Do I get along well with others?	1	2	3	4
13.	Do I react constructively to criticism?	1	2	3	4
14.	Do I remember names and faces?	1	2	3	4
15.	Am I punctual on all occasions?	1	2	3	4
16.	Do I have and evidence a spirit of cooperation?	1	2	3	4
17.	Am I free from prejudice?	1	2	3	4
18.	Do I know how people react in most situations?	1	2	3	4

ASSIGNMENT SHEET NO. 1

19. Am I generally a good listener?	1	2	3	4
20. Do I refuse to be hurt by what other people say?	1	2	3	4
21. Can I criticize without giving offense?	1	2	3	4
22. Do I usually like people for what they are, or do I wait to see if they like me?	1	2	3	4
23. Do I enjoy being part of a group?	1	2	3	4
24. Am I reliable?	1	2	3	4
25. Can I adapt myself to all situations?	1	2	3	4
26. Am I easily discouraged?	1	2	3	4
27. Do I apply myself to the problems of each day?	1	2	3	4
28. Can I make a decision quickly and accurately?	1	2	3	4
29. Am I loyal to my superiors and associates?	1	2	3	4
30. Do I try to get the other fellow's point of view?	1	2	3	4
31. Am I neat and clean in my work as well as my personal appearance?	1	2	3	4
32. Do I know where I make my mistakes, and do I admit them?	1	2	3	4
33. Am I looking for opportunities to serve others better?	1	2	3	4
34. Am I following a systematic plan for improvement and advancement?	1	2	3	4
35. Can I accept honors and advancements and yet keep my feet on the ground?	1	2	3	4
36. Am I playing the game of life honestly and fairly with myself, my fellow members, and others with whom I work?	1	2	3	4

TOTAL SCORE ____________

ASSIGNMENT SHEET NO. 1

Evaluation of Assignment Sheet No. 1

Evaluate your scores--If your score totaled over 100, your personality rating is definitely superior. If you've been honest with yourself, you are among the people who are most likely to succeed. A score of 90 - 100 is above average; 75 - 90 is average; below 75 shows plenty of room for improvement. How did you rate?

BECOMING A GOOD LEADER
UNIT III

ASSIGNMENT SHEET NO. 2--SELECTING LEADERS WITHIN YOUR COMMUNITY

Select three individuals in your local community which appear to you as good leaders. List three leadership traits for each individual.

NAME	LEADERSHIP TRAITS
1.	a.
	b.
	c.
2.	a.
	b.
	c.
3.	a.
	b.
	c.

BECOMING A GOOD LEADER
UNIT III

TEST

1. Define leadership.

2. List five characteristics of a good leader.

   a.

   b.

   c.

   d.

   e.

3. Discuss in a short paragraph the importance of being a good leader.

4. Select from the list below steps to take in order to become a good leader by placing an "X" in the blanks provided.

   _____a. Study qualities of a good leader

   _____b. Develop a plan for training oneself as a leader

   _____c. Be proud and boisterous about one's leadership ability

   _____d. Use "I" instead of "we" when telling about the organization

5. List five values of having leadership abilities.

   a.

   b.

   c.

   d.

   e.

6. List seven items in the FFA code of ethics.

   a.

   b.

   c.

   d.

   e.

   f.

   g.

7. Rate yourself as a leader after taking the Personality Self-Rating Scale.

8. Select leaders within your community, listing traits that make them leaders.

   (NOTE: If activities 7 and 8 have not been accomplished prior to the test, ask the instructor when they should be completed.)

BECOMING A GOOD LEADER
UNIT III

ANSWERS TO TEST

1. Combination of qualities which inspire confidence, draw others toward the leader, and cause them to follow
2. Any five of the following:
   a. Faith in people and desire to work with them
   b. Poise and confidence
   c. Preplanning of the program so the meeting moves with dispatch
   d. Interested and alert
   e. Democratic in dealing with group members
   f. Fair and impartial
   g. Patient, optimistic, and gives credit for work done
   h. Sensitive to the individuals and recognizes individual differences
   i. Sense of humor to relieve the tension of a serious meeting
   j. Realization that his responsibility is to let others share responsibilities
   k. Belief in the organization
   l. Desire to be a team member
3. Discussion should include:
   a. Leadership needed in all fields
   b. Challenge to learn leadership
   c. Respect created for others
   d. Maturation of individual
4. a, b
5. Any five of the following:
   a. Education
   b. Respect

   c. Advancement in an occupation
   d. Financial betterment
   e. Pride
   f. Security

6. Any seven of the following:
   a. Dress neatly and appropriately for the occasion
   b. Show respect for rights of others and be courteous at all times
   c. Be honest and do not take unfair advantage of others
   d. Respect the property of others
   e. Refrain from loud, boisterous talk, swearing, and horseplay
   f. Demonstrate sportsmanship in the show ring, judging contests, and meetings
   g. Be modest in winning and generous in defeat
   h. Attend meeting promptly and respect the opinions of others in discussion
   i. Take pride in the organization, activities, farming programs, exhibits, and the occupation of farming and ranching
   j. Share with others the experiences and knowledge gained by attending state and national meetings

7. Evaluated to the satisfaction of the instructor.

8. Evaluated to the satisfaction of the instructor.

IMPORTANCE OF PUBLIC SPEAKING
UNIT IV

UNIT OBJECTIVE

After completion of Unit IV, the student should be able to recognize the advantages of public speaking and relate these advantages to his/her vocational agriculture training. The student should be able to listen to a speech and evaluate what the speaker is saying and be able to use discussion groups as a means of improving his or her speaking ability. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of five hours of instruction, the student should be able to:

1. Match terms associated with public speaking to the correct definition.
2. Select the percent of time an individual spends speaking from a list of alternatives
3. Name four ways in which public speaking will benefit you today as a student and later on as a leader in your community.
4. Name three reasons for public speaking.
5. Name four advantages of being able to deliver a speech.
6. Distinguish between good speaking and bad speaking when given an example of each.
7. Match poor habits of speaking to a means of improvement.
8. Select three key words from a list of words that attract the attention of a prospective employer.
9. Name three advantages of being part of a group discussion as related to your ability to be a speaker.
10. Name the four requirements of a group discussion.
11. Match the types of discussion groups to the correct definition.
12. Name five factors or rules to follow when organizing a group discussion.
13. Name three ways to improve your speaking ability.
14. Name five factors to look and listen for when evaluating someone as a speaker.

15. Match the speaker's goals to the listener's response when given the listener's responses.

16. Demonstrate the ability to take an active part in a group discussion when given the type of discussion group and the topic for discussion.

17. Demonstrate the ability to evaluate a speaker giving a speech using the evaluation instrument provided.

IMPORTANCE OF PUBLIC SPEAKING
UNIT IV

SUGGESTED ACTIVITIES

I. Instructor:

   A. Provide students with objective sheet.

   B. Provide students with information and assignment sheets.

   C. Discuss unit and specific objectives.

   D. Discuss information and assignment sheets.

   E. Inform students of any speeches being given in the community.

   F. Identify the type of discussion group and select the topic for the students to use in the discussion.

   G. Give test.

II. Students:

   A. Read objectives.

   B. Study information sheets.

   C. Participate in group discussion and turn in assignment sheet.

   D. Attend a meeting where a speech is being given and evaluate the speaker.

   E. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

   A. Objectives

   B. Information sheets

   C. Assignment sheets

      1. Assignment Sheet #1--Participate in a Group Discussion

      2. Assignment Sheet #2--Evaluate a Speaker

D. Test

E. Answers to test

II. References:

A. Oliver, Robert T. and Rupert L. Cortright. Effective Speech. New York: Holt, Rinehart, and Winston.

IMPORTANCE OF PUBLIC SPEAKING
UNIT IV

INFORMATION SHEET

I. Terms and definitions

   A. Speech--A form of symbolism; an expression of thought, language, voice, and action; a product of the total personality

   B. Communication--A two-way process of speaking and listening

   C. Communicative speech--A speech that is not addressed at or toward its hearers; a talk with and to its listeners

   D. Rapport--A sympathetic relationship of mutual understanding and feeling

   E. Circular response--A mechanism through which rapport is established and maintained

   F. Listening--A process of more than and different from merely hearing; the active co-partnership role in any act of oral communication

   G. Discussion--A learning process, a process of sharing the information and experiences of a group

   H. Debate--An opportunity for presenting an argument for and against a proposed plan of action, so that the participants and listeners may make up their minds and be prepared to vote on a certain issue

II. Communicative activities of individuals

   A. Nine percent in writing

   B. Sixteen percent in reading

   C. Thirty percent in talking

   D. Forty-five percent in listening

III. Benefits of public speaking

   A. Builds friendship

   B. Exchanges information

   C. Gives or asks for orders

   D. Entertains others

INFORMATION SHEET

   E. Displays wit, intelligence, or information

IV. Reasons for public speaking

   A. Expression

   B. Communication

   C. Social control

V. Advantages of speech delivery

   A. Improve the art of speaking

   B. Develop clearer understanding of yourself

   C. Develop better understanding of other people

   D. Develop more logical, orderly habits of thinking

   E. Develop skill in evaluating what you hear

VI. Good speaking vs. Bad speaking

   A. Good speaking--occurs when the speaker is communicating with an audience

   B. Bad speaking--occurs when the speaker is talking at the audience

VII.	Poor habits of speaking	Means of improvement
A.	Careless preparation	Research and practice speech
B.	Boastfulness	Accuracy; being yourself
C.	Fault-finding	Accept constructive criticism
D.	Unsupported facts	Know what you are talking about
E.	Dull voice	Be enthused and pleasant
F.	Nervously rapid speech and/or pacing	Calm and steady rate of delivery

VIII. Key words of attention

   A. Appearance

   B. Personality

INFORMATION SHEET

   C. Speech

IX. Advantages of group discussions

   A. Increases conversational skills

   B. Develops skills in decision-making

   C. Contributes directly to improvement in public speaking

X. Requirements of group discussion

   A. Phrasing each question for discussion

   B. Organizing the discussion

   C. Leading the discussion

   D. Participating in discussion

XI. Types of group discussions

   A. Round-table--A group of individuals seated around a table and each member responds directly to the question

   B. Lecture-form--An expert on the subject gives a lecture and the discussion comes directly from the audience in the form of questions

   C. Panel discussion--A panel of experts on the subject sits on a platform and discusses the questions among themselves while the audience listens

   D. Debate-form--Similar to the lecture-form but usually presents both sides of the issue and the questions

   E. Symposium--A group of short talks are presented by experts on various phases of the subject or from different viewpoints which can later be opened to the listeners

   F. Personal interviews--An individual uses the principles of both conversation and discussion in conducting personal interviews or applying for a job

XII. Rules to follow when organizing group discussions

   A. Clearly define the topic

   B. Group should agree upon the principles or objectives

   C. Analyze question thoroughly

INFORMATION SHEET

D. Determine how far differences in agreements may extend

E. Leader of discussion should summarize what was discussed

XIII. Improve speaking ability

A. Speak to satisfy yourself

B. Relate speech to individual personality

C. Speech should give meaning to audience

XIV. Factors to consider when evaluating a speech

A. Is what the speaker saying true?

B. Does speech increase audience respect?

C. Is the speech audience-centered?

D. Does speech progress from introduction to conclusion?

E. Is audience listening to the speech or the speaker?

XV.	Speaker's goals	Listener's response
A.	To inform	To learn
B.	To induce belief	To be convinced
C.	To move to action	To do what is urged
D.	To inspire	To feel inspired
E.	To entertain	To enjoy

IMPORTANCE OF PUBLIC SPEAKING
UNIT IV

ASSIGNMENT SHEET NO. 1--PARTICIPATE IN A GROUP DISCUSSION

You have been assigned to a discussion group which will discuss a topic selected by the instructor. Using the information previously studied, organize the discussion and take an active part with the group members. In the space provided, write the part of the discussion that you will be responsible for presenting. At the close of the discussion, write a short paragraph concerning your own personal feelings toward the benefits of a discussion group.

Topic to be discussed: ______________________________

Group member's discussion part: ______________________________

Evaluate the discussion group by answering the following questions:

1. Was the discussion organized? __________
2. Was the discussion properly led? __________
3. Did each group member participate in the discussion? __________
4. Was the topic clearly defined? __________
5. Did the group members agree upon the principles or objectives of the discussion?

   ____

6. Did the leader of the discussion group summarize what was discussed?

   ____

Benefits of discussion groups:

IMPORTANCE OF PUBLIC SPEAKING
UNIT IV

ASSIGNMENT SHEET NO. 2--EVALUATE A SPEAKER

Select someone who is speaking in your local community and, by using the questions below, rate his skill as a speaker. If no such person is available within your community, rely on other means such as radio and television. After listening to the speech, complete the evaluation form below and turn in to your instructor for his/her evaluation.

1. Who was the speaker? ______________________________

2. Speech was given to what type of audience? ______________________________

3. Was the speech a communication speech? ______________________________

4. Were there any poor habits of speaking detected? ______ If yes, check the habit or habits.

    a. Careless preparation ______

    b. Boastfulness ______

    c. Fault-finding ______

    d. Unsupported facts ______

    e. Dull voice ______

    f. Rapid speaking ______

5. Which of the following were goals of the speaker as determined by the text of his speech? Place an "X" by the correct one.

    a. To inform ______

    b. To induce belief ______

    c. To move to action ______

    d. To inspire ______

    e. To entertain ______

6. Was the speech audience-centered? ______________________________

7. Did you agree with what the speaker was saying? ______________________________

8. Discuss in a short paragraph your overall opinion of the speech and your impression of the speaker. (Use back of this page if necessary.)

IMPORTANCE OF PUBLIC SPEAKING
UNIT IV

TEST

1. Match the terms on the right to the correct definition.

_____a. An opportunity for presenting an argument for and against a proposed plan of action so that the participants and listeners may make up their minds and be prepared to vote on a certain issue

_____b. A two-way process of speaking and listening

_____c. A learning process; a process of sharing the information and experiences of a group

_____d. A form of symbolism; an expression of thought, language, voice, and action; and a product of the total personality

_____e. A mechanism through which rapport is established and maintained

_____f. A speech that is not addressed at or toward its hearers; a talk with and to its listeners

_____g. A sympathetic relationship of mutual understanding and feeling

_____h. A process of more than and different from merely hearing; the active co-partnership role in any act of oral communication

1. Speech
2. Rapport
3. Communication
4. Debate
5. Discussion
6. Circular response
7. Communicative speech
8. Listening

2. An individual spends a portion of his time in speaking. From the list of alternatives, select the one that represents speaking time. Place an "X" in the blank.

_____a. Nine percent

_____b. Sixteen percent

_____c. Thirty percent

_____d. Forty-five percent

3. Name four ways in which public speaking will benefit you today as a student and later on as a leader in your community.

   a.

   b.

   c.

   d.

4. Name three reasons for public speaking.

   a.

   b.

   c.

5. Name four advantages of being able to deliver a speech.

   a.

   b.

   c.

   d.

6. Place an "X" in the blank if the statement represents an example of good speaking.

   ______a. Occurs when the speaker is talking at the audience

   ______b. Occurs when the speaker is communicating with an audience

7. Match the poor habits of speaking on the right to the correct means of improvement.

   ______a. Accept constructive criticism

   ______b. Know what you are talking about

   ______c. Research and practice speech

   ______d. Accuracy; being yourself

   ______e. Nervously rapid speech and/or pacing

   ______f. Dull voice

   1. Careless preparation

   2. Boastfulness

   3. Fault-finding

   4. Unsupported facts

   5. Calm and steady rate

   6. Be enthused and pleasant

8. Select three key words from the list of words on the right and write them in the blanks provided. These words are very important in the eyes of a prospective employer.

a. __________

b. __________

c. __________

1. Smart
2. Appearance
3. Height
4. Speech
5. Age
6. Personality

9. Name three advantages of being part of a group discussion as related to your ability to be a speaker.

a.

b.

c.

10. Name the four requirements of a group discussion.

a.

b.

c.

d.

e.

11. Match the types of group discussions on the right to the correct definition.

_____a. An individual uses the principles of both conversation and discussion in conducting personal interviews or applying for a job

_____b. A group of individuals seated around a table with each member responding directly to the question

_____c. A group of short talks are presented by experts on various phases of the subject or from different viewpoints which can later be opened to the listeners

1. Round-table
2. Lecture-form
3. Panel discussion
4. Debate-form
5. Symposium
6. Personal interview

______d. An expert on the subject gives a lecture and the discussion comes directly from the audience in the form of questions

______e. Similar to the lecture-form but usually presents both sides of the issue and questions

______f. A panel of experts on the subject sits on a platform and discusses the questions among themselves while the audience listens

12. Name five rules or factors to follow when organizing a group discussion.

a.

b.

c.

d.

e.

13. Name three ways to improve your speaking ability.

a.

b.

c.

14. Name five factors to look and listen for when evaluating someone as a speaker.

a.

b.

c.

d.

e.

15. Match the speaker's goals on the right to the listener's responses.

_____a. To learn

_____b. To enjoy

_____c. To be convinced

_____d. To feel inspired

_____e. To do what is urged

1. To entertain
2. To inform
3. To induce belief
4. To move to action
5. To inspire

16. Demonstrate the ability to:

a. Participate in group discussion.

b. Evaluate a speaker.

IMPORTANCE OF PUBLIC SPEAKING
UNIT IV

ANSWERS TO TEST

1. __4__ a.

   __3__ b.

   __5__ c.

   __1__ d.

   __6__ e.

   __7__ f.

   __2__ g.

   __8__ h.

2. c.

3. Any four of the following:
   - a. Builds friendship
   - b. Exchanges information
   - c. Gives or asks for orders
   - d. Entertains others
   - e. Displays wit, intelligence, or information

4. a. Expression
   - b. Communication
   - c. Social control

5. Any four of the following:
   - a. Improve the art of speaking
   - b. Develop clearer understanding of yourself
   - c. Develop better understanding of other people
   - d. Develop more logical, orderly habits of thinking

e. Develop skill in evaluating what you hear

6. b.

7. __3__ a.
__4__ b.
__1__ c.
__2__ d.
__5__ e.
__6__ f.

8. a. Appearance
b. Speech
c. Personality

9. a. Increases conversational skills
b. Develops skills in decision-making
c. Contributes directly to improvement in public speaking

10. a. Phrasing each question for discussion
b. Organizing the discussion
c. Leading the discussion
d. Participating in discussion

11. __6__ a.
__1__ b.
__5__ c.
__2__ d.
__4__ e.
__3__ f.

12. a. Clearly define the topic
b. Group should agree upon the principles or objectives

c. Analyze question thoroughly

d. Determine how far differences in agreements may extend

e. Leader of discussion should summarize what was discussed

13. a. Speak to satisfy yourself

b. Relate speech to individual personality

c. Speech should give meaning to audience

14. a. Is what the speaker is saying true?

b. Does speech increase audience respect?

c. Is the speech audience-centered?

d. Does speech progress from introduction to conclusion?

e. Is audience listening to the speech or the speaker?

15. __2__ a.

__1__ b.

__3__ c.

__5__ d.

__4__ e.

16. Performance skills will be evaluated by the instructor.

DEVELOPING AND DELIVERING A SPEECH
UNIT V

UNIT OBJECTIVE

After completion of this unit, the student should be able to name the intent of a speech when listening to or reading a text of a speech. The student should be able to select, gather information, and deliver a three- to eight-minute speech on some phase of agriculture. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with developing and delivering a speech to the correct definition.
2. Name the five general intents of a speech.
3. Name the steps in developing ideas concerning a speech.
4. Name the "must do" factors for beginning speakers when preparing a speech.
5. Name the three factors to remember when recording material for a speech.
6. State the rules for using quotations in a speech.
7. Name three important factors to remember when using statistics in a speech.
8. Select the most frequent error used by beginning speakers when given a list of alternatives.
9. Name three factors that facilitate speech development.
10. Distinguish between a topical and a sentence outline when given a definition of each.
11. Name four reasons for outlining a speech.
12. Name the three principal parts of a speech, arranging them in order of development.
13. Name four factors used when developing the main ideas of a speech.
14. Discuss in a short paragraph how the introduction is used in a speech.
15. Discuss in a short paragraph how the conclusion should blend with the speech.

16. Name three ways of making a good first impression when giving a speech.

17. Name five ways of developing and adding meaning to the delivery.

18. Name three reasons for using gestures in public speaking.

19. Name three ways of developing the proper delivery.

20. Demonstrate the ability to:

    a. Read a speech and identify the introduction, body, and conclusion.

    b. Select a speech topic from the different divisions of the FFA public speaking contest, conduct research on the subject, and write the information.

    c. Write a sentence outline of the speech from the information collected.

    d. Write and deliver a three- to eight-minute speech to the class.

DEVELOPING AND DELIVERING A SPEECH
UNIT V

SUGGESTED ACTIVITIES

I. Instructor:

   A. Provide student with objective sheet.

   B. Provide student with information and assignment sheets.

   C. Make transparencies.

   D. Discuss unit and specific objectives.

   E. Discuss information and assignment sheets.

   F. Inform student of any speeches being given in the community.

   G. Give test.

II. Student:

   A. Read objectives.

   B. Study information sheet.

   C. Complete all assignment sheets and return to instructor for his evaluation.

   D. Present a three- to eight-minute speech to the class.

   E. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:
   A. Objectives
   B. Information sheet
   C. Judge's score sheet
   D. Contestant's certification
   E. Transparency masters
      1. TM 1--What is an Outline?
      2. TM 2--What Should an Outline Look Like?

   3. TM 3--Principal Parts of an Outline
   4. TM 4--Conclusion

F. Assignment sheets

   1. Assignment Sheet #1--Read a Speech
   2. Assignment Sheet #2--Select Speech Topic
   3. Assignment Sheet #3--Write Sentence Outline on Selected Topic
   4. Assignment Sheet #4--Write and Deliver a Speech

G. Test

H. Answers to test

II. References:

A. Eisenson, Jon, and Paul H. Boase. *Basic Speech.* New York: The Macmillan Company.

B. Oliver, Robert T. and Rupert L. Cortright. *Effective Speech.* New York: Holt, Rinehart, and Winston.

DEVELOPING AND DELIVERING A SPEECH
UNIT V

INFORMATION SHEET

I. Terms and definitions

   A. Paraphrase--Process of taking a quotation and breaking it down into one's own words

   B. FFA public speaking contest--Contest held on the local, county, district, state, regional, and national levels where a student can demonstrate his ability in developing skills in public speaking

   C. Outline--Logical organization of ideas which forms the framework of any story, essay, or other form of literature

   D. Gesture--Use of arm or body motions as a means of expressing or emphasizing an idea; an integral part of speech

II. General intents of a speech

   A. To inform

   B. To induce belief

   C. To move to action

   D. To inspire

   E. To entertain

III. Developing ideas concerning speech

   A. Start with what one knows

   B. Research available references

   C. Record speech material

IV. "Must do" factors for beginning speakers when preparing a speech

   A. Write it

   B. Label it

   C. File it

INFORMATION SHEET

V. Factors for recording material

  A. Identify reference source

  B. Record passage accurately

  C. Record material as a single and complete unit

VI. Rules for using quotations

  A. Do not use several quotations in speech

  (NOTE: Audience wants your opinion, not some unknown author's opinion.)

  B. Use quotations in complete text

VII. Factors to remember when using statistics

  A. Source of information

  B. Date of information

  C. Representative value

VIII. Frequent error of beginning speaker--Selecting speech topics that are too broad

IX. Factors that facilitate speech development

  A. Make the speech clear

    1. Make it clear to yourself

    2. Phrase it clearly for your audience

    3. Clarify new idea further by definition

  B. Make the idea arresting

    1. Should be striking, different, and unusual

    2. Should be personal

    3. Should be concrete

  C. Make the idea significant

INFORMATION SHEET

D. Make the idea familiar--Get acquainted with audience

E. Make the idea attractive--Provide the audience with an opportunity to hear what is being said

F. Make the idea inevitable--Speak as though the idea has to happen

G. Make the idea appealing

X. Types of outlines

A. Sentence--Clearer and more complete form of outline; gives a more detailed statement

B. Topical outline--Key words or phrases that express a thought

XI. Reasons for outlining speech (Transparency 1)

A. Reveal strength and weakness

B. Aid in organization and development of ideas

C. Reveal the proportion of the speech

D. Serve as an invaluable time-saver

XII. Principal parts of a speech (Transparencies 2 and 3)

A. Introduction

B. Body--Main idea of the speech; should be developed first when preparing a speech

C. Conclusion

XIII. Factors used when developing main ideas

A. Limited in numbers

B. Stand out clearly and emphatically

C. Adequate to support the theme

D. Arranged in the order most effective for the audience

XIV. Introduction of speech--Attractive and motivating means of introducing the subject on which one is going to speak

(NOTE: This is a process of telling the audience what one is going to say.)

XV. Conclusion--Combining the various threads of the speech in one final effort to complete the speaker's purpose (Transparency 4)

(NOTE: Tell the audience what has been discussed.)

INFORMATION SHEET

XVI. Ways of making a good first impression

- A. Step up to lectern briskly and confidently
- B. Stand behind lectern in a comfortable but erect position
- C. Be clearly heard with pleasant volume
- D. Let all important actions, objects, and aids be clearly seen
- E. Gain and hold audience attention
- F. Recognize that some fear is normal and do not get upset

XVII. Developing and adding meaning to delivery

- A. Eye contact
- B. Gestures
  - 1. Hand
  - 2. Facial
- C. Posture
- D. Movement
- E. Voice control

XVIII. Reasons for using gestures

- A. Signify specific thought
- B. Imply attitudes or moods
- C. Express thoughts and feelings

XIX. Ways of developing proper delivery

- A. Stand in front of mirror
- B. Use tape recorder
- C. Present speech to someone

INFORMATION SHEET

XX. FFA public speaking contest topics

Speech Division	Sponsor	Context	Time
FFA Public Speaking	National FFA Foundation	Any field related to Agri. and FFA	6-8 min.
FFA Wildlife Conservation Speaking	Nebraska Chapter of Wildlife Federation	Assigned topic covering wildlife management	6-8 min.
Extemporaneous Speaking	Farmland Industries	Assigned agricultural topic	2½-3 min.
Creed Speaking	Sunland Plans	FFA Creed	Recitation + 3 min. for questions

(NOTE--For listing of other local area contests, contact local vocational agriculture instructor.)

B-87-B

INFORMATION SHEET
JUDGES SCORE SHEET
STATE PUBLIC SPEAKING CONTEST--FUTURE FARMERS OF AMERICA

PART I FOR SCORING AND COMPOSITION

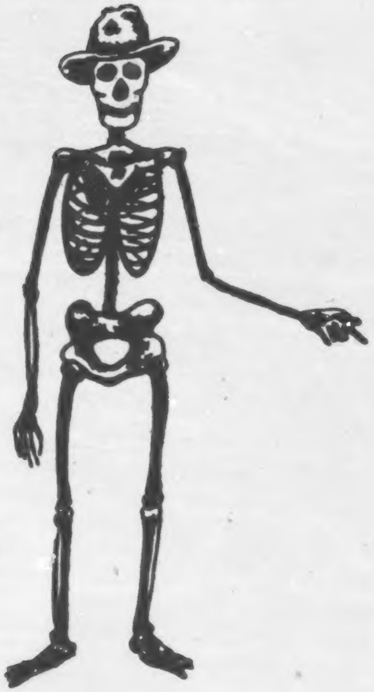
Items to be scored	Points Allowed	Points Awarded Contestants						
		1	2	3	4	5	6	7
1. CONTENT OF MANUSCRIPT Importance and appropriateness of subject Suitability of the material used Accuracy of the statements included Evidence of purpose Completeness and accuracy of bibliography	200							
2. COMPOSITION OF SPEECH MANUSCRIPT Organization of content Language used Units of thought Sentence structure Logical development Accomplishment of purpose	100							

PART II FOR SCORING DELIVERY OF THE PRODUCTION

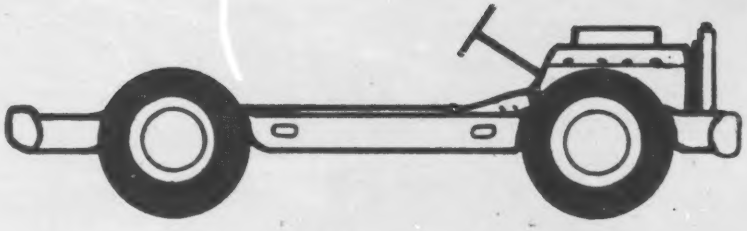
Items to be scored	Points Allowed							
1. VOICE Pitch Articulation Quality Force Pronunciation	100							
2. STAGE PRESENCE Personal appearance Attitude Poise and body posture Confidence Ease before audience Personality	100							
3. POWER OF EXPRESSION Fluency Directness Emphasis Communicative ability Sincerity Conveyance of thought and meaning	200							
4. RESPONSE TO QUESTIONS Ability to satisfactorily answer the questions on the speech which are asked by the judges indicating originality, familiarity with subject, and ability to think quickly	200							
5. GENERAL EFFECT Extent to which the speech was interesting, understandable, convincing, pleasing, and held attention	100							
TOTAL	1000							
Less time each minute	20							
GRAND TOTALS								
Numerical - or Final placing of contestants								

What is an Outline ?

A SKELETON



OR A FRAME



An Outline Forms The Framework Of A Story, Essay, Or Speech.

What should an Outline look like?

I. INTRODUCTION
  - A. Relationship establisher
  - B. Interest gainer
  - C. Revelation of central thought
  - D. Reason for giving this talk

II. BODY
  - A. First main point
    - 1. Subheading--Development of point
      - a. Supporting idea
      - b. Further support
    - 2.
  - B. Second main point
    - 1.________
      - a.________
      - b.________
    - 2.________

III. CONCLUSION
  - A. Summary or restatement
  - B. Final punch line

TM 2

Principal parts of a Speech

I. INTRODUCTION: Arouses interest in you and indicates your appreciation of the audience.

Lets the audience know what they are to hear about and prepares them for good listening.

II. BODY: Develops the main idea.

III. CONCLUSION: Summarizes, reviews, urges action, or gains respect for ideas expressed.

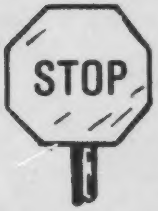
Conclusion

PURPOSES OF A CONCLUSION:

A. To Give A Feeling of Finality to Talk

B. To Clinch Arguments

C. To Inspire Action or Respect for Ideas



WHEN FINISHED

DEVELOPING AND DELIVERING A SPEECH
UNIT V

ASSIGNMENT SHEET NO. 1--READ A SPEECH

Read the speech below and when completed with the reading, identify the introduction, body, and conclusion. This may be accomplished by writing a short discussion of how well you believe the three parts were written. When completed, return to instructor for his evaluation.

A THING CALLED LEADERSHIP

by Speaking Winner - First Place National FFA Convention
Kevin Hall

I'd like to relate to you a story of a young boy who, when entering high school, had a burning desire to participate in school athletics. He was not the same as you and me, however, for an early childhood accident left him without the use of his arms. They hung limp at his sides, permanently crippled. He couldn't play baseball, football, or basketball. Wrestling and soccer were not for him. But there was one sport he could participate in - track.

In his sophomore, junior, and senior years he practiced hard after school with the track squad, but he never ran in a race. He wasn't good enough! Finally, at the last meet of the year, one of his teammates took ill suddenly and was unable to run. The boy of our story went to the coach and asked to be allowed to run in his teammate's place. Rather than lose the race by default, the coach granted permission, and as the runners took their positions in the blocks, a strange hush fell over the crowd. The gun went off, and as the runners shot up out of the blocks and down the track, our boy was last. He was last going around the first turn and last going down the far side, with his arms dangling pitifully at his sides while the other sprinters constantly enlarged the lead. As this boy started around the last turn he lost his balance, tripped, and fell. He got up without the use of his arms and again started to run. As he approached the finish line, the audience stood and cheered, many with tears in their eyes.

As he crossed the finish line, not only his teammates but also his competitors greeted him and hoisted him upon their shoulders and paid tribute to him. This boy had drive; he had ambition; he had courage; he had a goal. And it is these same four qualities that are characteristic of a successful FFA member and of a leader.

But what is this thing called leadership? Leadership has almost as many definitions as there are people in the world. As defined by *Webster's New World Dictionary*, leadership is the "ability to lead." As outlined in the inspirational book *Forward FFA*, leadership in an individual is that combination of qualities and attributes that radiates confidence, inspires others, and causes others to follow him.

Some people accept the philosophy that leaders are born, not made. Others believe that leaders are made, not born. I believe that no man is born a leader, but that every man is born with the potential of leadership. Not every man is capable of becoming an outstanding leader, but every man has a degree of leadership ability that should be developed and put to work.

Picture, if you would, a set of concentric circles. In the center of these circles we place a dot. The dot represents individuals, and the circles represent the degree of actual limits of leadership ability.

ASSIGNMENT SHEET NO. 1

Those with lesser ability lie within the first circle, those with more ability come within the second circle, and so on. It's our responsibility to push toward our potential to reach for our ultimate capability - this should be our goal.

We may never reach the outer circle - few, if any, will. But it is there for us to strive toward each day, week, month, year and for our lifetime. Our world, our environment and its problems are changing constantly and so will our potential.

Some worthy advice to young leaders and FFA members who are striving for this lifetime goal can be found in the words of Calvin Coolidge, who said:

> "Nothing can take the place of persistence,
> Talent will not, nothing is more common than unsuccessful men
> with talent,
> Education will not, the world is full of educated derelicts,
> Genius will not, unrewarded genius is almost a proverb.
> Persistence and perseverance alone are omnipotent.
> The slogan 'Press On' has solved and always will solve the problems
> of the human race."

W. H. Danforth, a great leader, wrote in his book *I Dare You*, "I dare you to be yourself, I dare you to do your best, I dare you to do better tomorrow than you have done today."

Today's youths are tomorrow's leaders - and today's FFA members are not only going to replace those down on the farm and in other agricultural positions, but many are destined to be leaders as well. At the rate our world is changing and with the growing complexity of our problems, tomorrow's leaders will have to be more efficient, better educated, and better citizens. They will have to be more knowledgeable about our environment, more aware of our country's problems, more concerned with the world, but most of all, tomorrow's leaders will have to be squares! Squares, you ask? Because you connote square to be a degrading term or insult. But doesn't it all depend on your definition of the word square? Back in Mark Twain's day, square was one of the finest words in the English language. You gave a man a square deal if you were honest. You gave him a square meal if he were hungry. You stood foursquare for your rights and square against all unjust oppression. And if you were out of debt you were square with the world, and then you could look your fellowman square in the eye. But this word square has been badly bent and misshapen, and today everyone knows what a square is:

A square is someone who volunteers when he doesn't have to; someone who starts a job and completes it to the best of his ability. Someone who has the courage to step out and take command; someone who helps his neighbor and cooperates with his fellowman. A square not only preaches the Golden Rule but practices it. This is the kind of person I picture as a leader.

So the next time someone calls you square for going to church on Sunday, for saluting your flag, for helping your neighbor, for having the drive, the ambition, the courage to overcome any obstacles on the way to your goal, be proud you are given that distinction, for tomorrow the world will call upon the squares to solve the problems and assume the positions of leadership!

(NOTE: Taken from the *1970 Proceedings of the 43rd National Convention of the Future Farmers of America*.)

DEVELOPING AND DELIVERING A SPEECH
UNIT V

ASSIGNMENT SHEET NO. 2--SELECT SPEECH TOPIC

Study closely the different divisions of the FFA public speaking contest. After you have finished, select a topic on which you would like to speak. Using the identified references, conduct as much research as possible on the topic. When completed, visit with the instructor about additional information. The research should be recorded below.

DEVELOPING AND DELIVERING A SPEECH
UNIT V

ASSIGNMENT SHEET NO 3--WRITE SENTENCE OUTLINE ON SELECTED TOPIC

At this point, you should begin to structure your speech in order to develop meaning and clarification. By using the information you have collected, write a sentence outline. When completed, have the instructor evaluate it and discuss means of improvement.

DEVELOPING AND DELIVERING A SPEECH
UNIT V

ASSIGNMENT SHEET NO. 4--WRITE AND DELIVER A SPEECH

Using the sentence outline written previously, write a three- to eight-minute speech. When finished, have the instructor evaluate it. Study the manuscript and be able to present the context orally. The space provided below may be used for writing the speech.

DEVELOPING AND DELIVERING A SPEECH
UNIT V

TEST

1. Match the terms on the right to the correct definition.

_____a. Contest held on the local, county, district, state, regional, and national levels where a student can demonstrate his ability in developing skills in public speaking

_____b. Logical organization of ideas which forms the framework of any story, essay, or other form of literature

_____c. Use of arm or body motions as a means of expressing or emphasizing an idea; an integral part of speech

_____d. Process of taking a quotation and breaking it down into one's own words

1. Gesture
2. Paraphrase
3. Outline
4. FFA public speaking contest

2. Name the five general intents of a speech.

a.

b.

c.

d.

e

3. Name the three steps in developing ideas concerning a speech.

a.

b.

c.

4. Name the three "must do" factors for beginning speakers when preparing a speech.

a.

b.

c.

5. Name the three factors to remember when recording material for a speech.

   a.

   b.

   c.

6. State the rules for using quotations in a speech.

   a.

   b.

7. Name three important factors to remember when using statistics in a speech.

   a.

   b.

   c.

8. Select the statement below which represents the most frequent error used by beginning speakers. Place an "X" in the blank.

   ______a. Speech topic not appropriate for speaker

   ______b. Speech topic not appropriate for audience

   ______c. Speech topic too broad

   ______d. Introduction does not fit the body of speech

9. Name three factors that facilitate speech development.

   a.

   b.

   c.

10. Distinguish between a topical and a sentence outline by placing an "X" in the blank in front of the topical outline.

    ______a. Clearer and more complete form of outline; gives a more detailed statement

    ______b. Key words or phrases that express a thought

11. Name four reasons for outlining a speech.

    a.

    b.

c.

d.

12. Name the three principal parts of a speech, arranging them in order of development.

    a.

    b.

    c.

13. Name four factors used when developing the main ideas of a speech.

    a.

    b.

    c.

    d.

14. Discuss in a short paragraph how the introduction is used in a speech.

15. Discuss in a short paragraph how the conclusion should blend with the speech.

16. Name three ways of making a good first impression when giving a speech.

    a.

    b.

    c.

17. Name five ways of developing and adding meaning to your delivery.

    a.

    b.

    c.

    d.

    e.

18. Name three reasons for using gestures in public speaking.

    a.

    b.

    c.

19. Name three ways of developing the proper delivery.

    a.

    b.

    c.

20. Demonstrate the ability to:

    a. Read a speech and identify the introduction, body, and conclusion.

    b. Select a speech topic, conduct research on the subject, and write the information.

    c. Write a sentence outline of the speech from the information collected.

    d. Write and deliver a three to eight-minute speech.

    (NOTE: If these have not been accomplished prior to the test, ask the instructor when the above activities should be completed.)

DEVELOPING AND DELIVERING A SPEECH
UNIT V

ANSWERS TO TEST

1. a. 4
   b. 3
   c. 1
   d. 2
2. a. To inform
   b. To induce belief
   c. To move to action
   d. To inspire
   e. To entertain
3. a. Start with what one knows
   b. Research available references
   c. Record speech material
4. a. Write it
   b. Label it
   c. File it
5. a. Identify reference source
   b. Record passage accurately
   c. Record material as a single and complete unit
6. a. Do not use several quotations in speech
   b. Use quotations in complete text
7. a. Source of information
   b. Date of information
   c. Representative value

8. c

9. Any three of the following:

   a. Make the speech clear
   b. Make the idea arresting
   c. Make the idea significant
   d. Make the idea familiar
   e. Make the idea attractive
   f. Make the idea inevitable
   g. Make the idea appealing

10. b

11. a. Reveal strength and weakness
   b. Aid in organization and development of ideas
   c. Reveal the proportion of the speech
   d. Serve as an invaluable time-saver

12. a. Introduction
   b. Body
   c. Conclusion

13. a. Limited in numbers
   b. Stand out clearly and emphatically
   c. Adequate to support the theme
   d. Arranged in the order most effective for the audience

14. The introduction is used in a speech to make it attractive and motivating; it is a means of introducing the subject on which one is going to speak

15. The conclusion combines the various threads of the speech in one final effort to complete the speaker's purpose

16. Any three of the following:
    a. Step up to lectern briskly and confidently
    b. Stand behind lectern in a comfortable but erect position
    c. Be clearly heard with pleasant volume
    d. Let all important actions, objects, and aids be clearly seen
    e. Gain and hold audience attention
    f. Recognize that some fear is normal and do not get upset

17. a. Eye contact
    b. Gestures
    c. Posture
    d. Movement
    e. Voice control

18. a. Signify specific thought
    b. Imply attitudes or moods
    c. Express thoughts and feelings

19. a. Stand in front of mirror
    b. Use tape recorder
    c. Present speech to someone

20. Performance skills will be evaluated to the satisfaction of the instructor.

ORIENTATION AND GENERAL SAFETY
UNIT VI

UNIT OBJECTIVE

After completion of this unit, the student should be able to define agricultural mechanics and list areas of study in an agricultural mechanics program. The student should also be able to list occupations, identify tools, and list general safety precautions to observe in the shop. This knowledge will be evidenced by scoring eighty-five percent on a unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Define agricultural mechanics.
2. List two reasons why agricultural mechanics instruction is important to the agricultural industry.
3. Select from a list purposes for training in agricultural mechanical skills.
4. List ten steps in keeping a clean and orderly shop.
5. Match occupations in agricultural mechanics with the correct description.
6. List four purposes of the safety color code used in agricultural mechanics programs.
7. Discuss in a short paragraph eye protection in the shop.
8. List steps to be taken involving accidents and first aid.
9. List three components of the fire triangle.
10. Match the four classes of fires with statements defining each class.
11. Match the types of fire extinguisher that is best suited to extinguish each class of fire.
12. Identify 30 common tools used in the agricultural mechanics shops.
13. Indicate a willingness to work safely by subscribing to the student safety pledge form.

ORIENTATION AND GENERAL SAFETY
UNIT VI

SUGGESTED ACTIVITIES

I. Instructor:

  A. Provide students with objective sheet.

  B. Provide students with information sheet and safety pledge form.

  C. Make transparencies.

  D. Discuss unit and specific objectives.

  E. Discuss information sheet.

  F. Give test.

II. Student:

  A. Read objective sheet.

  B. Study information sheet and take notes.

  C. Complete the safety pledge form.

  D. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

  A. Objectives

  B. Information sheet

  C. Transparency masters

    1. TM 1--The Fire Triangle

    2. TM 2--Types of Fire Extinguishers

    3. TM 3--Common Tools

    4. TM 4--Common Tools (Continued)

    5. TM 5--Common Tools (Continued)

D. Assignment sheets

1. Assignment Sheet No. 1--Student Safety Pledge

2. Assignment Sheet No. 2--General Shop Safety Test

E. Answers to Assignment Sheet No. 2

F. Test

G. Answers to test

II. References:

A. *Instructional Materials for Vocational Agriculture I.* College Station, Texas: Teaching Materials Center, Agricultural Education Department, Texas A & M University.

B. Sneep, Neil O. *Vocational Agriculture Training Programs: Safe Tractor Operation and Safe Farm Machinery Operation.* East Lansing, Michigan: Rural Manpower Center, Michigan State University, 1969.

C. Schmidt, A. W., D. J. Witt, Loren Mills, and Charles Pearson. "Safe Practices in the Vocational Agriculture Shop." Urbana, Illinois: Teachers of Vocational Agriculture, State of Illinois.

D. *Test Materials Handout and Job Sheets* prepared by the Agricultural Engineering 4220 class, Summer, Professor George Cook. Stillwater, Oklahoma: Oklahoma State University, 1963.

E. Williams, William A. *Accident Prevention Manual for Shop Teachers.* Chicago, Illinois: American Technical Society, 1963.

F. *Best's Safety Directory.* Morriston, New Jersey: A. M. Best Co., 1968.

G. Ross, Henry and R. N. Craig. *Modern Farm Shop.* Austin, Texas: Steck-Vaughn Co., 1954.

H. *A Guide for Course Planning in Introduction to Agriculture.* Raleigh, North Carolina: Division of Vocational Education, Agricultural Education Section, Department of Public Instruction.

I. Hollenberg, A. H. *How to Teach Arc Welding in Farm Mechanics.* Columbus, Ohio: The James F. Lincoln Arc Welding Foundation, 1958.

J. Hoover, Norman K. *Handbook of Agricultural Occupations.* Danville, Illinois: Interstate Printers and Publishers, 1963.

K. Phipps, Lloyd J. *Mechanics in Agriculture.* Danville, Illinois: Interstate Printers and Publishers, Inc., 1970.

ORIENTATION AND GENERAL SAFETY
UNIT VI

INFORMATION SHEET

I. Agricultural mechanics- All the unspecialized mechanical activities performed on the farm and in the home including instruction in the following areas:

   A. Agricultural shopwork

   (NOTE: This includes selection, sharpening, care and correct use of shop tools and equipment; woodwork and simple carpentry; sheet metal work; elementary forge work; electric arc and oxyacetylene welding; pipe fitting; simple plumbing repairs; and rope work.)

   B. Agricultural power and machinery

   (NOTE: This includes selection, management, adjustment, operation, maintenance, and repair (excluding major repair requiring specialized equipment and services) of gas engines, trucks, and tractors and principle machines used in farming and agriculturally oriented business and services.)

   C. Rural electrification

   (NOTE: This includes utilization of electricity in the home and in productive enterprises and selection, installation, operation, and maintenance of electrical equipment.)

   D. Agricultural buildings and conveniences

   (NOTE: This includes elementary scale drawing and plan reading; farmstead layout; functional requirements of houses, shelters, and storages; water systems; and septic tanks and sewage disposals.)

   E. Soil and water management

   (NOTE: This includes elementary leveling; land measurement and mapping; drainage; irrigation; terracing; contouring; and strip cropping.)

II. Importance of agricultural mechanics instruction to the agricultural industry

   A. Most of the work involves some type of mechanical activity

   B. Approximately 85% of machinery in operation is out of adjustment

   C. Must be able to service and maintain all the equipment used

INFORMATION SHEET

III. Purposes for training in agricultural mechanic skills

  A. Aids students in discovering mechanical aptitudes

  B. Trains students in basic skills needed on the farm and for related agricultural industries

  C. Prepares students for future training in mechanics

  D. Prepares students for entry into job opportunities after high school

IV. Steps in keeping a clean, orderly shop

  A. Store equipment being repaired or constructed in an orderly fashion at the end of the work period

  B. Clean and store tools, helmets, and goggles in their proper place at the end of the work period

  C. Report broken tools to the teacher

  D. Place oily rags in covered cans

  E. Turn off all arc welders when job is done

  F. Shut off oxyacetylene welding outfits at cylinders, drain hoses, close oxygen and acetylene blow pipe valves, clean welding tables, and restore rods to the holders at the close of the work period

  G. Be responsible for the area or station assigned to you

  H. Brush all benches, tables, and the floor at end of work period

  I. Keep tools in their proper places

  J. Do not scuffle or join in horseplay in the shop

  K. Do not run in the shop

  L. Do not work with tools with which you have not received instruction

  M. Make sure that all electrical equipment is turned off at end of day

  N. Use tools for their specific purpose

  O. Supply all visitors with face shields upon entering the shop

  P. Store personal property including project property in designated locations

INFORMATION SHEET

Q. Do not waste time

(NOTE: Conduct in the shop should be the same as that of regular class time.)

R. Check all clothes before returning them to lockers after class time

V. Description of agricultural mechanics occupations

A. Welder--Repairs and builds equipment

B. Farm machinery operator--Operates farm equipment as a farm employee

C. Mechanic--Repairs and overhauls engines, hydraulic systems, electric systems, etc.

D. Mechanic's helper--Assists mechanic and is in training to become a mechanic

E. Farm machinery parts manager--Handles parts and repairs in a machinery dealership

F. Farm machinery salesman--Works with a dealership selling farm machinery and equipment

G. Farm machinery fieldman--Assists farmers with problems in operating their equipment

VI. Purposes of the safety color code

A. Reduces glare by diffusing sufficient light for better vision throughout the shop

B. Reduces eyestrain, tension, and fatigue by "setting off" material from machines and work areas

C. Promotes safety by pointing out critical parts and areas

D. Promotes better housekeeping by providing a more pleasing environment

(NOTE: Colors used in the safety code as applied to the shop are given below.)

Green -- Applied to non-critical parts of equipment and machined surfaces, nameplates, and bearing surfaces; used to designate the location of safety and first aid equipment

Yellow -- Applied to operating levers, wheels, handles, and hazardous areas which may cause stumbling, falling, or tripping; used to designate caution

INFORMATION SHEET

Orange = Applied to electrical switches, interior surfaces of doors on fuse and electrical power boxes, movable guards and parts, inside of non-movable guards, traffic lanes and overhead hazards; used to designate dangerous parts of equipment which may cut, crush, shock, or otherwise injure

Red = (Physical color associated with fire) Used to identify the location of fire fighting equipment

(NOTE: Emergency fire exits shall be designated in red. Buttons or levers for electrical switches used for the stopping of machinery should be designated in red. Gasoline cans should be painted red with additional identification in the form of a yellow band around the can.)

Blue = Used as the basic color for designating caution against starting equipment while it is being worked on or against the use of defective equipment

(NOTE: A blue tag should be attached to defective equipment. The tag should be lettered "Out of Order.")

Ivory = Can be applied to table edges, vice jaws, and edges of tool rests to reflect light and "show the way"

Aluminum = (Also unpainted steel) Can be applied to tops of tables and work areas to provide contrast with work

VII. Summary Regarding Eye Protection in Shops.

A. EYE PROTECTIVE DEVICES--ARE REQUIRED TO BE WORN IN CERTAIN COURSES OF INSTRUCTION

B. Protects student and teacher participating in or observing instruction

C. Cautions against harmful conditions

1. Hot molten metals or other molten materials
2. Milling, sawing, turning, shaping, cutting, grinding, or stamping of any solid materials
3. Heat treatment, tempering, or kiln firing of any metal or other materials
4. Gas or electric arc welding or other forms of welding processes

INFORMATION SHEET

5. Repair or servicing of any vehicle where there is danger of injury to the eyes

6. Caustic or explosive materials

VIII. Steps to be taken involving accidents and first aid

A. Report all accidents to the teacher immediately

(NOTE: If a serious injury is apparent, the hospital or school nurse should be contacted immediately. Do not attempt to move the victim until help arrives.)

B. Use basic first aid

1. Stop the bleeding

2. Clear the airway

3. Treat for shock

IX. Components of the fire triangle (Transparency 1)

A. Fuel--Any combustible material

B. Oxygen--Necessary to sustain combustion

C. Heat--Enough to raise the fuel to its ignition temperature

(NOTE: To produce fire these three elements are necessary and must be present at the same time. If any one of the three is missing, a fire cannot be started or with the removal of any one of them, the fire will be extinguished.)

X. Classes of fires

A. Class A--Fires that occur in ordinary combustible materials, such as wood, rags, and rubbish

B. Class B--Fires that occur with flammable liquids, such as gasoline, oil, grease, paints, and thinners

C. Class C--Fires that occur in or near electrical equipment, such as motors, switchboards, and electrical wiring

D. Class D--Fires that occur with combustible metals, such as magnesium

XI. Types of fire extinguishers (Transparency 2)

A. Pressurized water--Operates usually by squeezing a handle or trigger; used on Class A fires

INFORMATION SHEET

B. Soda acid--Operates by turning extinguisher upside down; used on Class A fires

C. Carbon dioxide (CO_2)--Operates usually by squeezing a handle or a trigger; used on Class B and C fires

D. Dry chemical--Operates usually by squeezing a handle, a trigger, or lever; used on Class B, C, and D fires

(NOTE: On Class D fires, dry sand is as effective as any dry chemical other than Purple X. The cost of Purple X chemical places it out of reach of most shops.)

E. Foam--Operates by turning extinguisher upside down; used on Class A and B fires

XII. Common tools used in agricultural mechanics shops (Transparencies 3, 4, and 5)

A. Dividers

B. Inside calipers

C. Outside calipers

D. Welder's chipping hammer

E. Burr reamer

F. Hand drill

G. Adjustable hacksaw

H. Jack plane

I. Carpenter's brace

J. Ripsaw

K. Wire brush

L. Crosscut saw teeth

M. Ripsaw teeth

N. Machinest's vise

O. Adjustable wrench

P. Slip-joint pliers

Q. Bolt cutter

INFORMATION SHEET

R. Combination wrench

S. Ball-peen hammer

T. Soldering copper

U. Open-end wrench

V. Standard screwdriver

W. Carpenter's level

X. Wood chisel

Y. Steel-framing square

Z. Vise-grip pliers

AA. Wrecking bar

BB. Pipe wrench

CC. Tinner's snips

DD. Combination square

EE. Pipe cutter

FF. Steel tape

GG. Tap wrench

HH. Allen wrench

II. Diestock

JJ. Curved claw hammer

KK. Flat file

LL. C-clamp

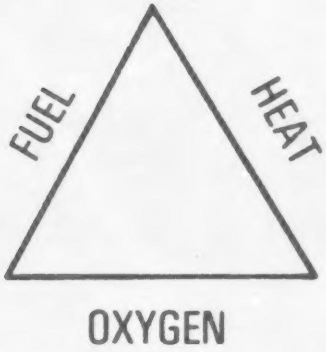
MM. Folding rule

NN. Round file

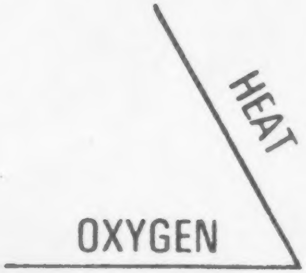
OO. Phillips screwdriver

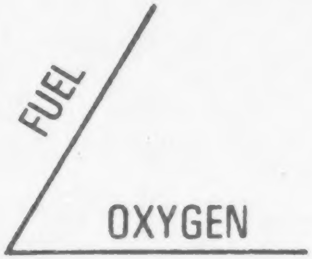
The Fire Triangle

To produce fire, three things must be present at the same time.


FUEL
HEAT
OXYGEN

If any one of the three is missing, a fire cannot be started or, with the removal of any one, the fire will be extinguished.


HEAT
OXYGEN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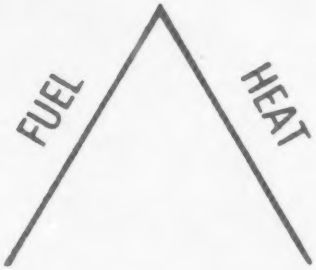
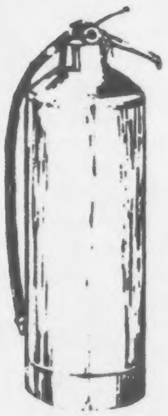
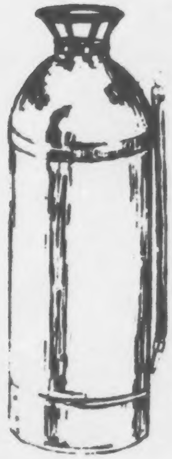


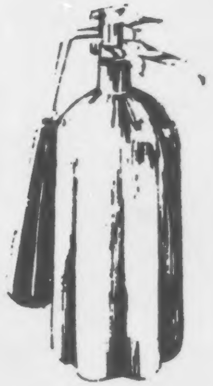
Types of Fire Extinguishers



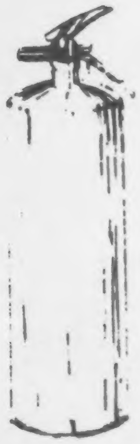
Pressurized
Water



Soda-Acid



Carbon
Dioxide

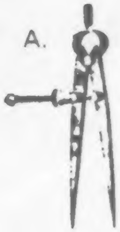


Dry
Chemical

Foam

Common Tools

A.



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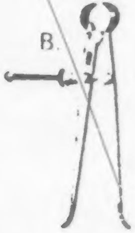

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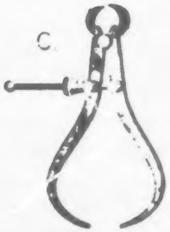

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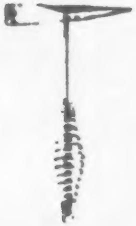

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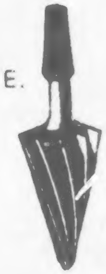

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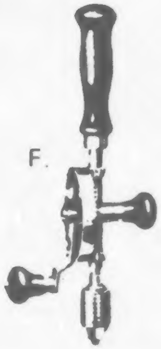

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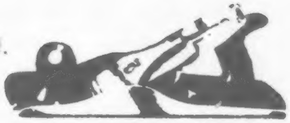

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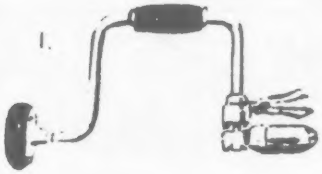

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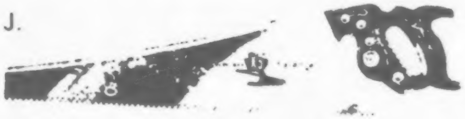

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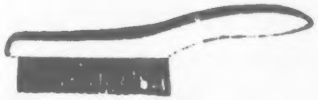

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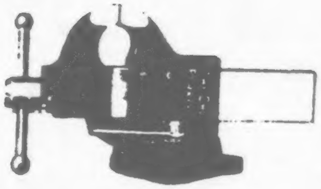
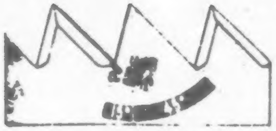


L.



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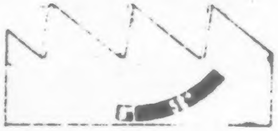
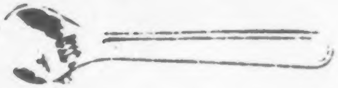


Common Tools

(Continued)

O.



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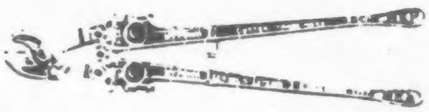

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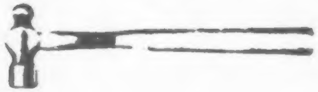

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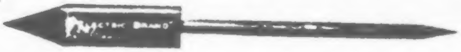

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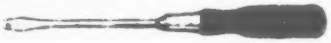

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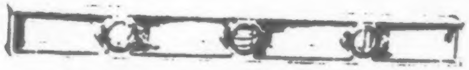

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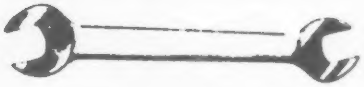

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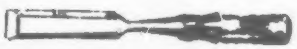

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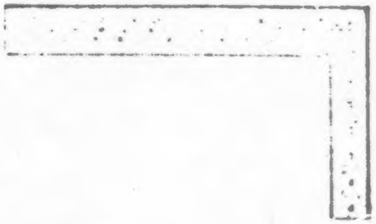
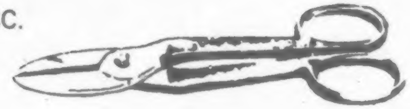


X.

AA.

BB.

CC.



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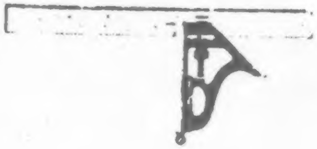
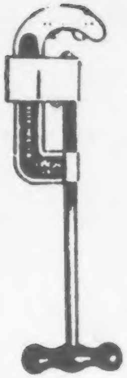


Common Tools
(Continued)

EE.



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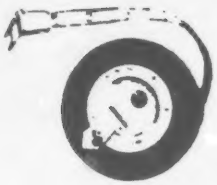

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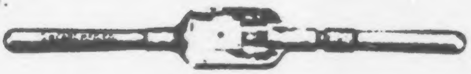

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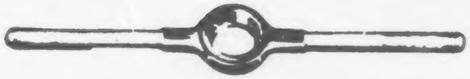
II.



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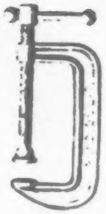
LL.



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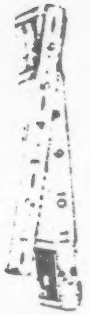

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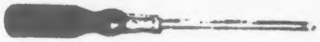
OO.



ORIENTATION AND GENERAL SAFETY
UNIT VI

ASSIGNMENT SHEET NO. 1--STUDENT SAFETY PLEDGE

1. I pledge myself to follow all rules and regulations pertaining to the safety of myself and others.
2. I will constantly watch for any unsafe acts, practices, or conditions that might reduce the safety of myself or others.
3. I will report all unsafe acts, practices, or conditions to my teacher immediately.
4. I will do my job in a safe and orderly manner, so that I will not endanger the safety of myself or others.
5. I will report all injuries, no matter how slight, to the first aid department immediately.
6. I will keep my work place in a safe and orderly condition at all times.
7. I will promote and respectfully solicit the cooperation of all pupils in safety and good housekeeping.
8. I will bear in mind at all times that my job will be safe only as long as I make it safe.
9. I will never lose sight of the fact that accidents do not just happen, they are caused.
10. I will do these things with respect and mutual understanding in all my relations with my fellow pupils, because only in this way can I feel sure that I am doing everything within my power to make my room and my school a safer and better place in which to work.

ASSIGNMENT SHEET NO. 1

SAFETY-PRACTICE FORM

______________________ HIGH SCHOOL

______________________, who is enrolled in a vocational ______________________ course, will, as a part of his shop experience, operate machines, providing that his parent or guardian gives written permission.

It is understood that each student will be given proper instruction, both in the use of the equipment and in correct safety procedures concerning it, before being allowed to operate it himself.

The student must assume responsibility for the following safe practices, and we therefore ask that he subscribe to the following safety pledge:

1. I promise to follow all safety rules for the shop.
2. I promise never to use a machine without first having permission from the teacher.
3. I will not ask permission to use a particular machine unless I have been instructed in its use and have made 100% on the safety test given on that machine.
4. I will report any accident or injury to the teacher immediately.

Date ______________________ Student's Signature ______________________

I hereby give my consent to allow my child to operate all machines and equipment necessary in carrying out the requirements of the course in which he/she is enrolled.

Date ______________________ Parent's Signature ______________________

Parents are cordially invited to visit the shops to inspect the machines and to see them in operation at any time.

ORIENTATION AND GENERAL SAFETY
UNIT VI

ASSIGNMENT SHEET NO. 2--GENERAL SHOP SAFETY TEST

Answer the following by circling "T" if true and "F" if false.

T F 1. You should always learn the right way to do a job.

T F 2. Always work at a fast speed.

T F 3. Report all injuries to instructor.

T F 4. Observe all warning signs and tags.

T F 5. Unless you have been taught to operate a machine, stay away from it.

T F 6. Never attempt to make an adjustment or clear a jam while a machine is running.

T F 7. Guards may be left off some machines.

T F 8. It is permissible to leave a machine running while not in use.

T F 9. Remove chuck wrenches from chucks immediately after wrench is used.

T F 10. Use only tools and equipment in good condition.

T F 11. Equip files with handles before using them.

T F 12. Always use the proper tool for the job.

T F 13. In lifting an object, be sure you have a good footing then jerk the object.

T F 14. Wear goggles when there is a chance of getting foreign material in your eye.

T F 15. When working on or near machinery, don't wear worn or ragged clothing.

T F 16. Before using a hammer, check the trademark.

T F 17. When chiseling metal, wear goggles and caution nearby students against sparks.

T F 18. To avoid flying metal chips, never use a chisel with a mushroom head.

T F 19. When using a cold chisel on an empty barrel, the barrel should be filled with air.

T F 20. Always put out the torch when it becomes necessary to readjust the work.

ASSIGNMENT SHEET NO. 2

T F 21. Never use more than 15 psi of acetylene pressure.

T F 22. Always handle hot metal with gloves.

T F 23. Open cylinder valves quickly.

T F 24. Never use oil on oxyacetylene regulators.

T F 25. Never use oxygen as a substitute for compressed air.

T F 26. Release adjusting screw on oxygen regulator before o[illegible]

T F 27. To light the oxyacetylene torch, use a match.

T F 28. It is permissible to adjust the arc welding machine while it is [illegible]

T F 29. When striking an arc always say "cover."

T F 30. Do not use worn or frayed cables when running a welding machine

T F 31. First aid stations are marked with a red cross.

T F 32. "Horseplay" should never occur in the shop.

T F 33. Always have good ventilation when working.

____
Student Signature

ORIENTATION AND GENERAL SAFETY
UNIT VI

ANSWERS TO ASSIGNMENT SHEET #2

1. T
2. F
3. T
4. T
5. T
6. T
7. F
8. F
9. T
10. T
11. T
12. T
13. F
14. T
15. T
16. F
17. F
18. T
19. F
20. T
21. T
22. F
23. F
24. T
25. T
26. T
27. F
28. F
29. T
30. T
31. F
32. T
33. T

ORIENTATION AND GENERAL SAFETY
UNIT VI

TEST

1. Define agricultural mechanics.

2. List two reasons why agricultural mechanics instruction is important to the agricultural industry.

   a.

   b.

3. Select from the list below purposes for training in agricultural mechanic skills. Place an "X" in front of the statement that is correct.

   _____a. Aids students to continue their education

   _____b. Aids students in discovering mechanical aptitudes

   _____c. Prepares students for entry into job opportunities after high school

   _____d. Train students in basic skills needed on the farm and for related agricultural industries

   _____e. Prepares students for college entry

4. List ten steps in keeping a clean and orderly shop.

   a.

   b.

   c.

   d.

e.

f.

g.

h.

i.

j.

5. Match occupations in agricultural mechanics with the correct description.

______a. Operates farm equipment as a farm employee

______b. Assists mechanic and is in training to become a mechanic

______c. Works with dealership selling farm machinery and equipment

______d. Repairs and builds equipment

______e. Repairs and overhauls engines, hydraulic systems, electric systems, etc.

______f. Handles parts and repairs in machinery dealership

______g. Assists farmers with problems in operating their equipment

1. Welder
2. Farm machinery operator
3. Mechanic
4. Mechanic's helper
5. Farm machinery parts manager
6. Farm machinery salesman
7. Farm machinery fieldman

6. List four purposes of the safety color code used in agricultural mechanics programs.

a.

b.

c.

d.

7. Discuss in a short paragraph eye protection in the shop.

8. List steps to be ta[illegible] involving accidents and first aid.

   a. Accidents

   b. First aid

      1.

      2.

      3.

9. List three components of the fire triangle.

   a.

   b.

   c.

10. Match the classes of fire with the correct statement defining each class.

_____a. Fires that occur with flammable liquids, such as gasoline, oil, grease, paints, and thinners

_____b. Fires that occur in ordinary combustible materials, such as wood, rags, and rubbish

_____c. Fires that occur in or near electrical equipment, such as motors, switchboards, and electrical wiring

_____d. Fires that occur with combustible metals, such as magnesium

1. Class A
2. Class B
3. Class C
4. Class D

11. Match the type of fire extinguisher best suited to extinguish each class of fire. Answers may be used more than once.

_____a. Fires that occur with flammable liquids such as gasoline, oil, or grease

_____b. Fires that occur in or near electrical equipment such as motors, switchboards, and electrical wiring

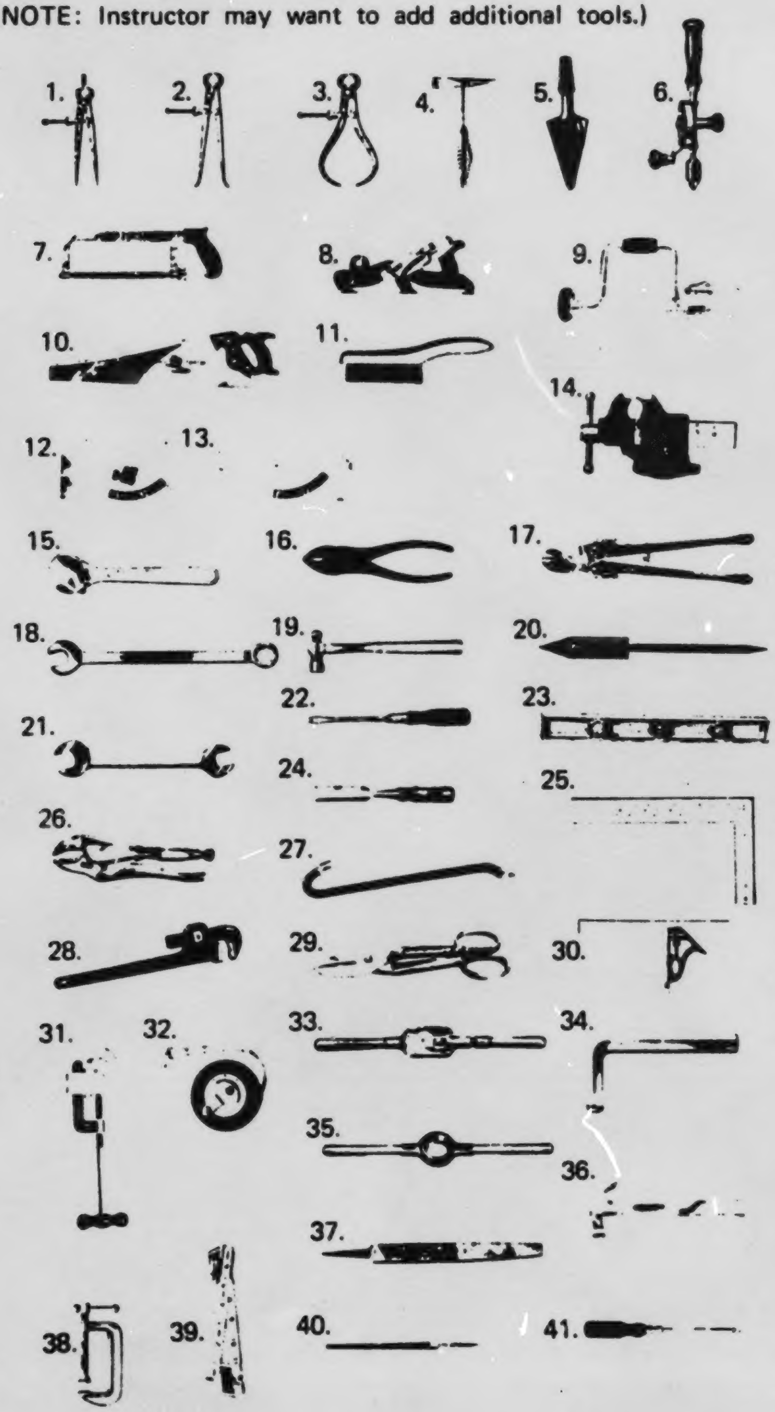
_____c. Fires that occur in ordinary combustible materials such as wood, rags, and rubbish

_____d. Fires that occur with combustible metals, such as magnesium

1. Pressurized water
2. Carbon dioxide (CO_2)
3. Dry chemical
4. Soda acid
5. Foam

20. Identify 30 of the 41 tools below. Use the answer sheet provided making sure the tool identified matches the number of the tool and answer sheet.

(NOTE: Instructor may want to add additional tools.)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ANSWER SHEET FOR TOOLS

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41.

13. Indicate a willingness to work safely by subscribing to the student safety pledge form.

(NOTE: If this has not been accomplished prior to the test, ask the instructor when the above activity should be completed.)

ORIENTATION AND GENERAL SAFETY
UNIT VI

ANSWERS TO TEST

1. All the unspecialized mechanical activities performed on the farm and in the home including instruction in the following areas: agricultural shopwork, agricultural power and machinery, agricultural buildings and conveniences, rural electrification, and soil and water management

2. Any two of the following

   a. Most of the work involves some type of mechanical activity

   b. Approximately 85% of machinery in operation is out of adjustment

   c. Must be able to service and maintain all equipment used

3. b, c, d

4. Any ten of the following

   a. Store equipment being repaired or constructed in an orderly fashion at the end of the work period

   b. Clean and store tools, helmets, and goggles in their proper place at the end of the work period

   c. Report broken tools to the teacher

   d. Place oily rags in covered cans

   e. Turn off all arc welders when job is done

   f. Shut off oxyacetylene welding outfits at cylinders, drain hoses, close oxygen and acetylene blow pipe valves, clean welding tables, and restore rods to the holders at the close of the work period

   g. Be responsible for the area or station assigned to you

   h. Brush all benches, tables, and the floor at end of work period

   i. Keep tools in their proper places

   j. Do not scuffle or join in horseplay in the shop

   k. Do not run in the shop

   l. Do not work with tools with which you have not received instruction

   m. Make sure that all electrical equipment is turned off at end of day

   n. Use tools for their specific purpose

o. Supply all visitors with face shields upon entering the shop

p. Store personal property including project property in designated locations

q. Do not waste time

r. Check all clothes before returning them to lockers after class time

5. a. 2

b. 4

c. 6

d. 1

e. 3

f. 5

g. 7

6. a. Reduces glare by diffusing sufficient light for better vision throughout the shop

b. Reduces eyestrain, tension, and fatigue by "setting off" material from machines and work areas

c. Promotes safety by pointing out critical parts and areas

d. Promotes better housekeeping by providing a more pleasing environment

7. Discussion should include:

a. EYE PROTECTIVE DEVICES--ARE REQUIRED TO BE WORN IN CERTAIN COURSES OF INSTRUCTION

b. Protects student and teacher participating in or observing instruction

c. Cautions against harmful conditions

1) Hot molten metals or other molten materials

2) Milling, sawing, turning, shaping, cutting, grinding, or stamping of any solid materials

3) Heat treatment, tempering, or kiln firing of any metal or other materials

4) Gas or electric arc welding or other forms of welding processes

5) Repair or servicing of any vehicle where there is danger of injury to the eyes

    6) Caustic or explosive materials

8. a. Report all accidents to the teacher immediately
   b. Use basic first aid
      1) Stop the bleeding
      2) Clear the airway
      3) Treat for shock
9. a. Heat
   b. Fuel
   c. Oxygen
10. a. 2
    b. 1
    c. 3
    d. 4
11. a. 2, 3, and 5
    b. 2 and 3
    c. 1, 4, and 5
    d. 3
12.
    1. Dividers
    2. Inside calipers
    3. Outside calipers
    4. Welder's chipping hammer
    5. Burr reamer
    6. Hand drill
    7. Adjustable hacksaw
    8. Jack plane
    9. Carpenter's brace

10. Ripsaw
11. Wire brush
12. Crosscut saw teeth
13. Ripsaw teeth
14. Machinist's vise
15. Adjustable wrench
16. Slip-joint pliers
17. Bolt cutter
18. Combination wrench
19. Ball-peen hammer
20. Soldering copper
21. Open end wrench
22. Standard screwdriver
23. Carpenter's level
24. Wood chisel
25. Steel framing square
26. Vise-grip pliers
27. Wrecking bar
28. Pipe wrench
29. Tinner's snips
30. Combination square
31. Pipe cutter
32. Steel tape
33. Tap wrench
34. Allen wrench
35. Diestock

36. Curved claw hammer
37. Flat file
38. C-clamp
39. Folding rule
40. Round file
41. Phillips screwdriver

(Others as added by instructor.)

13. Evaluated to the satisfaction of the instructor.

REPAIRING AND SHARPENING TOOLS
UNIT VII

UNIT OBJECTIVE

After completion of this unit, the student should be able to identify and use tool fitting equipment and supplies. The student should be able to sharpen and repair common hand tools. This knowledge will be evidenced by scoring ninety percent on a unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. List the specifications of a power grinding wheel
2. List the safety procedures for power grinders
3. Describe the method used for cleaning tools with pumice stone
4. List the reasons for knowing how to sharpen and repair tools
5. List the reasons for reshaping a cold chisel
6. List the reasons for dressing a grinding wheel
7. Demonstrate the ability to perform the following jobs:
    a. Dress a grinding wheel
    b. Reshape a cold chisel
    c. Sharpen a plane iron or wood chisel
    d. Reshape a screw driver
    e. Sharpen a twist drill
    f. Dress an auger bit
    g. Replace a handle in a tool

REPAIRING AND SHARPENING TOOLS
UNIT VII

SUGGESTED ACTIVITIES

I. Instructor:

  A. Provide students with objective sheet

  B. Provide students with information and job sheets

  C. Discuss unit and specific objectives

  D. Demonstrate procedures outlined in job sheets

  E. Give test

II. Students:

  A. Read objectives

  B. Study information sheets

  C. Demonstrate the ability to accomplish the procedures outlined in the job sheets

  D. Take test

INSTRUCTIONAL MATERIALS

I. Included in this Unit:

  A. Objective sheet

  B. Information sheets

  C. Job sheets:

    1. Job Sheet No. 1--Dress a grinding wheel

    2. Job Sheet No. 2--Reshape a cold chisel

    3. Job Sheet No. 3--Sharpen a plane iron or wood chisel

    4 Job Sheet No. 4--Reshape a screwdriver

    5. Job Sheet No. 5--Sharpen a twist drill

    6. Job Sheet No. 6--Dress an auger bit

    7. Job Sheet No. 7--Replace a handle in a tool

D. Test

E. Answers to test

II. References:

A. Wake, T. J. and McCoy, Vernon L., *The Farm Shop*, New York: The MacMillan Company.

B. Jones, Mack M., *Shop Work On The Farm*, New York: McGraw-Hill Book Company, Inc.

C. Phipps, Lloyd J., McCoy, H. F., Scranton, L. L., and Cook, G. C., *Farm Mechanics Text and Handbook*, Danville, Illinois: Interstate Publishers and Printers.

REPAIRING AND SHARPENING TOOLS
UNIT VII

INFORMATION SHEET

I. Specifications of a power grinding wheel

  A. Grit

    1. Determined by the number of cutting particles per linear inch

    2. 80 grit wheels (medium-fine) are used for sharpening light cutting tools such as knives and drill bits

    3. 60 grit wheels (medium) are used for grinding heavy cutting tools such as axes and hoes

    4. 30 to 40 grit wheels (coarse) are used for coarse grinding such as cast iron, welds and plowshares

  B. Size

    1. Determined by the thickness and diameter

    2. Grinding wheels 6" in diameter and 1" thick are satisfactory for sharpening most farm tools

    3. Maximum diameter depends on the capacity of the grinder

  C. Arbor hole

    1. Determined by the diameter of the arbor (grinder shaft)

    2. Correct fittings are essential for balancing the wheel

    3. Bushings may be used to obtain a snug fit

  D. Rim speed

    1. Determined by the diameter of the wheel and speed of the grinder in rpm

    2. Measured in fpm (feet per minute) over the cutting surface

    3. This speed should not exceed 4200 fpm for general purpose grinding

II. Safety procedures for power grinders

  A. Always utilize eye protection

  B. Insure that the grinder wheel is secure and correctly balanced on the arbor

  C. Insure that the wheel guard is properly adjusted

INFORMATION SHEET

D. Keep the grinding wheel true with frequent dressings

E. Adjust the tool rest as needed for the job

F. Gently apply material to the wheel for grinding

G. Do not grind on the sides of the wheel

H. Replace a wheel when it is half its original size

III. Methods of cleaning tools

A. Dust, grease and grime may be removed with a cloth moistened in kerosene

B. Use pumice stone to remove light rust. Allow a small stream of water to flow over the surface of the tool while it is being rubbed with a lump of pumice stone. If running water is not available, apply the pumice with a wet cloth and wipe clean

C. Clean badly rusted tools with fast cutting abrasives or liquid rust removers. Refinish the metal surface with a rubbing compound

D. After cleaning, apply a light coat of oil to prevent rusting

IV. Reasons for knowing how to sharpen and repair tools

A. Sharp and well maintained tools are the mark of a good craftsmen

B. Cutting parts are easily damaged and dulled

C. Defective tools will not function properly

D. Save money in replacement and repair

V. Reasons for reshaping a cold chisel

A. More efficient cutting

B. Mushroomed heads are dangerous

VI. Reasons for dressing a grinding wheel

A. Remove dulled cutting particles from the wheel

B. Remove foreign matter clogging the pores of the stone

C. Remove grooves and restore shape

REPAIRING AND SHARPENING TOOLS
UNIT VII

JOB SHEET NO. 1--DRESSING A GRINDING WHEEL

I. Tools and materials needed

   A. Grinding wheel mounted on power grinder.

   B. Dressing tool.

   C. Combination square.

   D. Wrenches for adjusting tool rest.

II. Procedures

   A. Adjust the tool rest so that it has 1/16 to 1/8 inch clearance from the grinding wheel and is in line with the center of the wheel arbor.

   B. Start the power grinder.

   C. Hold the dressing tool with both hands on the tool rest.

   D. Start on the right edge of the grinding wheel with about 1/3 of the cutter edge beyond the right side of the wheel.

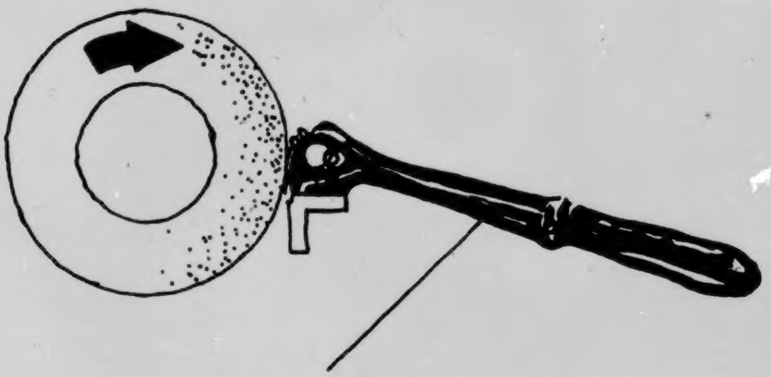
   E. Move the dressing tool from the right to the left until it overhangs on the left side of the wheel.

   F. Repeat this process until the wheel is clean.

   G. Stop the power grinder.

   H. Check the squareness of the cutting surface by placing a combination square on the face of the wheel and see if it is square with the sides.

III. Diagram of the procedure



REPAIRING AND SHARPENING TOOLS
UNIT VII

JOB SHEET NO. 2--RESHAPING A COLD CHISEL

I. Equipment

- A. Power grinder
- B. Cold chisel
- C. Template

II. Procedures

- A. Place the chisel flat on the tool rest, and grind the cutting edge square until all gaps are removed.
- B. To grind a cold chisel, grasp it firmly at such a position that when the first finger comes up against the work rest the chisel will bear pressure against the wheel at the desired angle.
- C. Hold the end of the chisel firmly against the grinding wheel and move it slowly from side to side, pivoting it over the work rest, as in figure a.
- D. Dip the chisel into water frequently to prevent overheating and drawing the temper.
- E. When one side is ground smooth and even, turn the chisel over and grind the other side in the same manner.
- F. Check the angle of bevel using a template or home-made gauge, as in figure b.
- G. Turn the chisel around and grind the head to remove any mushrooming caused by severe blows of a hammer. The head should be rounded inward slightly, as in figure c

III. Diagrams of the procedures

Figure a

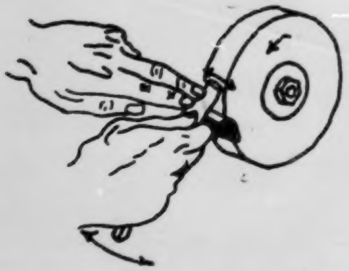


Figure b

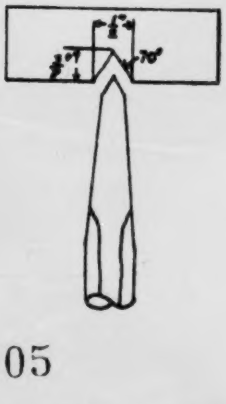
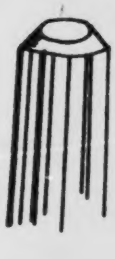


Figure c



REPAIRING AND SHARPENING TOOLS
UNIT VII

JOB SHEET NO. 3--SHARPENING A PLANE IRON OR WOOD CHISEL

I. Equipment

- A. Dull plane iron or wood chisel.
- B. Power grinder.
- C. Oil stone.
- D. Template.
- E. Combination square.

II. Procedures

- A. Jointing the iron or chisel.
    1. Purpose in to remove gaps and square end.
    2. Place the iron or chisel on the grinder tool rest with the bevel pointing up and touching it lightly against the wheel.
    3. Move the iron smoothly across the grinder wheel until the nicks are removed.
    4. Check the edge for squareness, as in figure a.
- B. Grinding the plane iron or wood chisel.
    1. Grind at an angle of about 25 to 30 degrees.
    2. Check the angle of bevel with a template or homemade gauge, as in figure b.
    3. The length of bevel should be a little more than twice the thickness of blade for general-purpose work.
    4. Adjust the work rest on the grinder so that the tool will come in contact with the wheel at the desired angle.
    5. Grasp the tool so the first finger will come against the bottom of the work rest and the thumb holds the tool securely on top of the work rest, as in figure c.
    6. Keep the tool perpendicular to the wheel face, and move the tool from side to side until a wire edge appears on the flat side.
    7. Recheck bevel angle and squareness.

C. Honing the place iron or wood chisel.

1. Place a few drops of oil on the oilstone to remove the wire edge on the flat side of the blade, as in figure d.
2. Place the bevel against the oilstone and move the blade back and forth until shape, as in figure e.
3. Sharpening jigs may be used that will hold the tool at the exact angle for honing.

III. Diagrams of the procedure.

Figure a

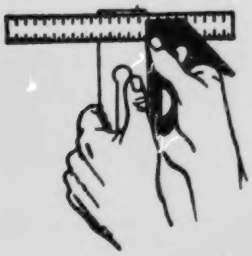


Figure b

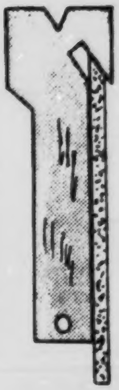


Figure c

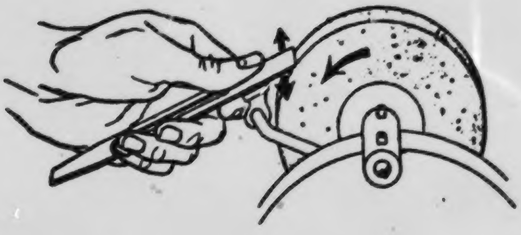


Figure d

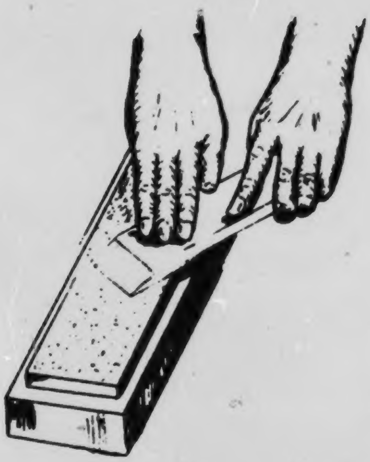
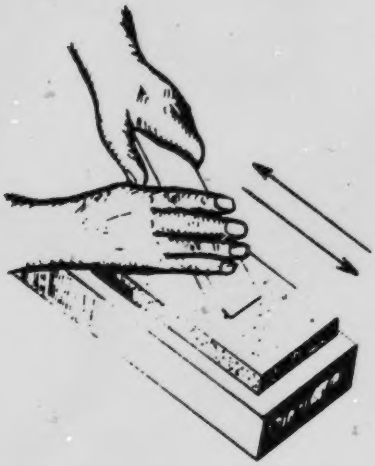


Figure e



REPAIRING AND SHARPENING TOOLS
UNIT VII

JOB SHEET NO. 4--RESHAPING A SCREWDRIVER

I. Equipment

A. Power grinder

B. Metal file

C. Screwdriver

D. Desired size screw

II. Procedures

A. Place the screwdriver flat on the tool rest so that the tip meets the grinder wheel at a 90 degree angle.

B. Push the tip lightly against the grinding wheel to square the tip and remove any gaps.

C. Grind the tip back until it is slightly thicker than the width of the screw head.

D. Shape both faces of the screwdriver by placing the flat part of the tip on the grinding wheel, as in figure a.

E. Apply light pressure on the top of the blade and move the tip forward and back the entire length of the blade until it is ground to the proper shape.

F. Dip the point into water frequently to cool.

G. Place the tip in the screw slot to check the thickness, as in figure b.

H. Grind the sides of the blade until the width of the tip is the same as the screw slot.

I. Final shaping may be done with a metal file.

III. Diagrams of the procedure

Figure a

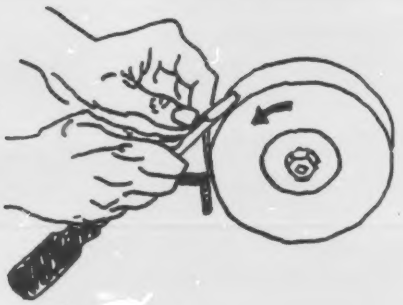
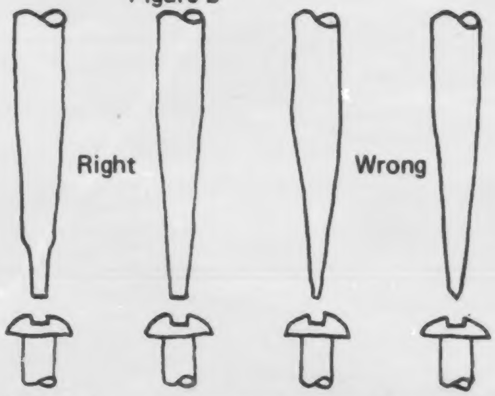


Figure b



Right and wrong shapes of screw-driver ends.

REPAIRING AND SHARPENING TOOLS
UNIT VII

JOB SHEET NO. 5--SHARPENING A TWIST DRILL

I. Equipment

A. Power grinder

B. Drill bit

C. Template

II. Procedures

A. Set the work rest level with the arbor

B. Hold the drill near the point with the left forefinger and thumb. Cradle the drill in the first joint of the forefinger, and place the back of the finger on the tool rest, as in figure a

C. The axis of the drill should make an angle of about 59 degrees with the cutting surface of the wheel, as in figure b

D. Grasp the drill shank in the right hand with the thumb on top and move the point forward until one lip makes contact with the wheel

E. Push the drill shank downward to the left to an angle of about 45 degrees and at the same time rotate the drill about 1/6 of a turn clockwise

F. Make several light strokes removing a small amount of metal each time so as not to destroy the original shape of the point; also dip in water frequently

G. Check the angles and length of the cutting lips frequently with a template, as in figure c

III. Diagrams of the procedure

Figure a

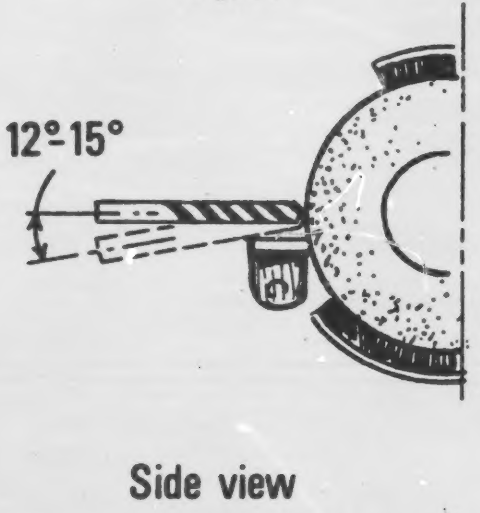


Figure b

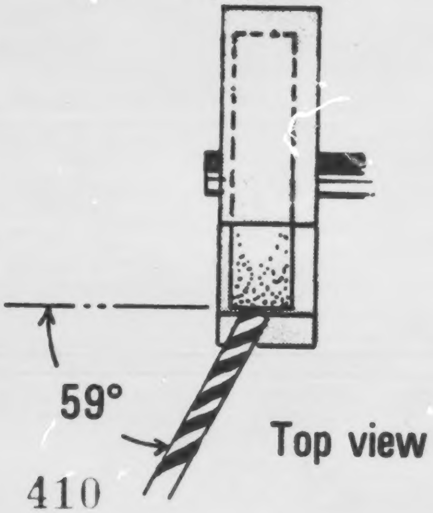
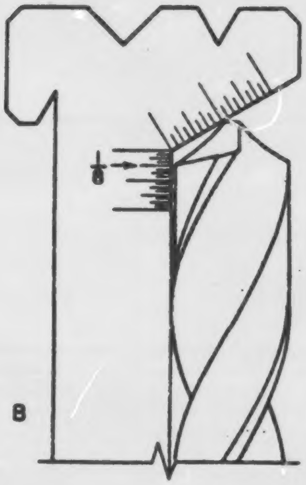


Figure c



REPAIRING AND SHARPENING TOOLS
UNIT VII

JOB SHEET NO. 6--DRESSING AN AUGER BIT

I. Equipment

   A. Auger bit

   B. Auger bit file

II. Procedures

   A. Dress the spurs

      1. Hold the auger bit firmly in one hand and the file in the other, as in figure a. File the spur that is to the left of the feed screw.

      2. The smooth edge of the file is placed next to the cutting lip to prevent filing the bottom edge of the cutting lip.

      3. The outside of the spurs are not filed unless the edges have been damaged.

      4. Rotate the auger bit one-half turn and file the other spur.

   B. Sharpen the cutting lips

      1. Place the auger bit on a wood surface, as in figure b.

      2. File the top of the cutting lip on the right of the feed screw.

      3. The bottoms of the cutting lips are not filed.

      4. Rotate the auger bit one-half turn and file the other cutting tip.

      5. File both cutting lips the same amount so that they will cut evenly.

   C. Dress the feed screw

      1. If the threads are slightly damaged, they can be improved by filing with a slim, tapered, triangular file.

III. Diagrams of the procedure

Figure a

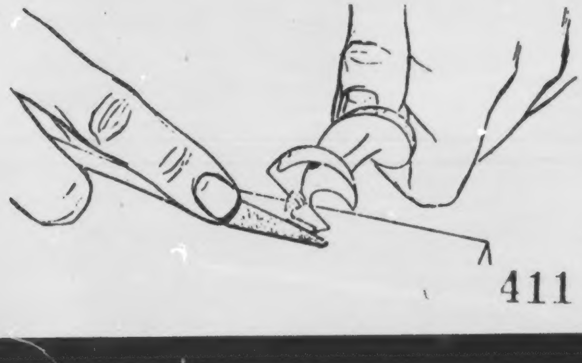
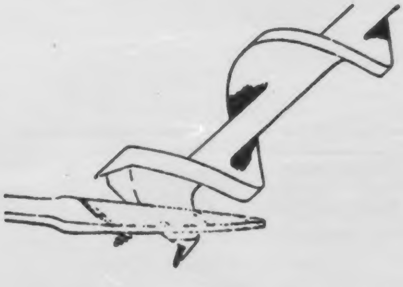


Figure b



REPAIRING AND SHARPENING TOOLS
UNIT VII

JOB SHEET NO. 7--REPLACING A HAMMER OR AXE HANDLE

I. Equipment

   A. Hammer or axe

   B. Hack saw

   C. Rip saw

   D. Wood rasp

   E. Twist drill

   F. Mallet

II. Procedures

   A. Remove the pieces of broken handle from the tool head

      1. Saw close to toolhead with a hack saw, as in figure a

      2. Remove the wood from the eye by first drilling out with a metal twist drill and using a punch to clean it out

   B. Work the new handle down to size with a wood rasp, as in figure b

   C. Rip a kerf for the wedge if a wooden wedge is to be used. Leave as is if a metal wedge is to be used

   D. Drive the new handle firmly into place using a mallet, as in figure c

   E. Drive a thin wooden wedge into the kerf in the end of the handle

   F. After the handle is fitted and tightly wedged into place, saw off the protruding part of the handle and wedge with a hack saw, as in figure d

   G. If a metal wedge is to be used instead of a wooden one, it should be installed as the last step

III. Diagrams of the procedures

Figure a

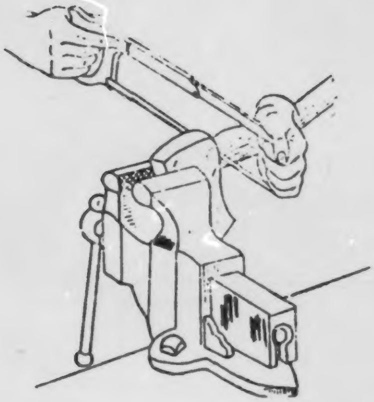


Figure b

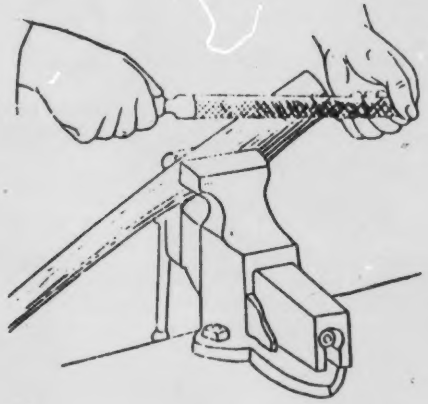


Figure c

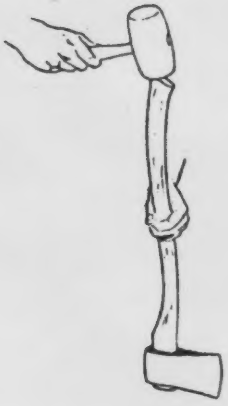
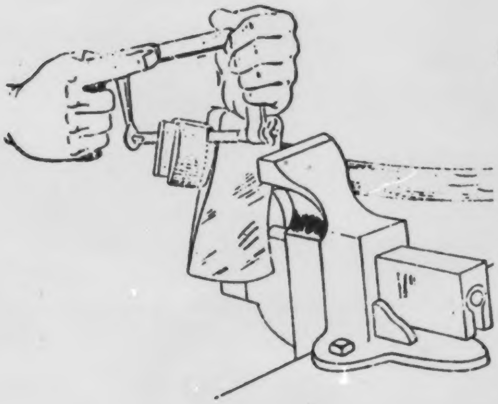


Figure d



REPAIRING AND SHARPENING TOOLS
UNIT VII

TEST

1. List four specifications of a power grinder wheel

   a.
   b.
   c.
   d.

2. List five of the safety procedures for power grinders

   a.

   b.

   c.

   d.

   e.

3. Describe the method used for cleaning tools with pumice stone

4. List four reasons for knowing how to sharpen and repair tools

   a.

   b.

   c.

   d.

5. List two reasons for reshaping a cold chisel

   a.

   b.

6. List three reasons for dressing a grinding wheel.

   a.

   b.

   c.

7. Demonstrate to the satisfaction of the instructor the following procedures:

   a. Dress a grinding wheel
   b. Reshape a cold chisel
   c. Sharpen a plane iron or wood chisel
   d. Reshape a screw driver
   e. Sharpen a twist drill
   f. Dress an auger bit
   g. Replace a handle in a tool

REPAIRING AND SHARPENING TOOLS
UNIT VII

ANSWERS TO TEST

1. a. Grit
   b. Size
   c. Arbor hole
   d. Rim speed
2. Any five of the following
   a. Always utilize eye protection
   b. Insure that the grinder wheel is secure and correctly balanced on the arbor
   c. Insure that the wheel guard is properly adjusted
   d. Keep the grinding wheel true with frequent dressings
   e. Adjust the tool rest as needed for the job
   f. Gently apply material to the wheel for grinding
   g. Do not grind on the sides of the wheel
   h. Replace a wheel when it is half its original size
3. Allow a small stream of water to flow over the surface of the tool while it is being rubbed with a lump of pumice stone. If running water is not available, apply the pumice with a wet cloth and wipe clean
4. a. Sharp and well maintained tools are the mark of a good craftsman
   b. Cutting parts are easily damaged and dulled
   c. Defective tools will not function properly
   d. Save money in replacement and repair
5. a. More efficient cutting
   b. Mushroomed heads are dangerous
6. a. Remove dulled cutting particles from the wheel
   b. Remove foreign matter clogging the pores of the stone
   c. Remove grooves and restore shape
7. Performance skills will be evaluated by the instructor

LIVESTOCK SELECTION
UNIT VIII

UNIT OBJECTIVE

After completion of this unit, the student should be able to identify the parts of beef, horses, sheep, swine, and dairy animals and the wholesale cuts of a carcass for pork, lamb, and beef. The student should also be able to select desirable livestock adaptable to the local community and present a set of reasons for placing a class of animals. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on a unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with livestock selection to the correct definition.
2. List the three steps in the livestock selection process.
3. Identify the parts of beef, swine, sheep, dairy animals, and horses.
4. Identify desirable and undesirable beef, sheep, swine, dairy animals, and horses.
5. Identify the wholesale cuts of beef, pork, and lamb.
6. Match approximate percentage of yield of wholesale cuts to that cut on a carcass for beef, pork, and lamb.
7. Write ten comparative advantage terms and ten criticism terms used in livestock selection.
8. Present a set of reasons for livestock either written or orally.

LIVESTOCK SELECTION
UNIT VIII

SUGGESTED ACTIVITIES

I. Instructor:

  A. Provide each student with objective sheet.

  B. Provide each student with information sheet.

  C. Make transparencies.

  D. Discuss unit and specific objectives.

  E. Discuss information sheet.

  F. Give test.

  (NOTE: Instructor may want to secure picture judging sets and/or slides from Animal Science Extension Specialist, Marvel Baker Hall, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln, Lincoln Nebraska, 68583, for students to practice judging.)

II. Students:

  A. Read objectives.

  B. Study information sheet and take notes.

  C. Demonstrate to the instructor the ability to select animals by using picture judging sets or by taking field trip.

  D. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

  A. Objectives

  B. Information sheet

  C. Transparency masters

    1. TM 1--Parts of a Beef Animal

    2. TM 2--Desirable and Undesirable Beef Animals (Side View)

3. TM 3--Desirable and Undesirable Beef Animals (Rear View)
4. TM 4--Wholesale Cuts of Beef
5. TM 5--Approximate Yield Percentage of a Beef Carcass
6. TM 6--Outline of Steer
7. TM 7--Parts of a Swine
8. TM 8--Desirable and Undesirable Barrows (Side View)
9. TM 9--Wholesale Cuts of Pork
10. TM 10--Approximate Yield Percentage of a Swine Carcass
11. TM 11--Indications of Muscling in Swine
12. TM 12--Outline of a Hog
13. TM 13--Parts of a Sheep
14. TM 14--Desirable and Undesirable Lambs (Side View)
15. TM 15--Wholesale Cuts of Lamb
16. TM 16--Approximate Yield Percentage of a Lamb Carcass
17. TM 17--Shape of Top and Muscling of Lambs
18. TM 18--Outline of a Lamb
19. TM 19--Parts of a Dairy Cow
20. TM 20--Desirable and Undesirable Dairy Cows (Side View)
21. TM 21--Desirable and Undesirable Dairy Cows (Body Capacity and Udder and Rear Attachment)
22. TM 22--Outline of a Dairy Cow
23. TM 23--Parts of a Horse
24. TM 24--Desirable and Undesirable Horses (Front and Rear View)

D. Test

E. Answers to test

II. References:

A. Ensminger, M. E. *Beef Cattle Science*. Danville, Illinois: Interstate Printers and Publishers, 1965.

B. Bundy, C. E. and Ronald V. Diggins. *Livestock and Poultry Production*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1975.

C. *Animal Science*. Columbia, Missouri: Missouri State Department of Education, Agricultural Education Section, University of Missouri.

D. *Instructional Materials for Vocational Agriculture I*. College Station, Texas: Teaching Materials Center, Agriculture Education Department, Texas A & M University.

E. Ensminger, M. E. *The Stockman's Handbook*. Danville, Illinois: Interstate Publishers and Printers, 1962.

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G. Pinney, D. O. *Handbook of Livestock Evaluation*. Stillwater, Oklahoma: Oklahoma State University, 1969.

H. Noble, Robert L. *Individual Study Guide for Animal Science 1124*. Stillwater, Oklahoma: Oklahoma State University, 1972.

J. Ensminger, M. E. *Horses and Horsemanship*. Danville, Illinois: Interstate Printers and Publishers, 1969.

LIVESTOCK SELECTION
UNIT VIII

INFORMATION SHEET

I. Terms and definitions

A. Type--General term commonly defined as a combination of characteristics which make an animal most useful for a specific purpose

(NOTE: Type is determined by the general form or shape of an animal.)

B. Balance of symmetry--Proper proportions and blending of parts

C. Meatiness or muscling--High proportion of volume in the areas of the high priced cuts

D. Quality--Overall smoothness, blending of shoulders, and refinement of head and bone

E. Trimness--Freedom of excess finish or fat

F. Tight-framed--Ability of an animal to "hold itself together" as indicated by strength of top, tightness of shoulders, and squareness of feet and leg placement

G. Soundness--Quality of being correct on the feet and legs as opposed to unsound

(NOTE: This is used primarily with breeding stock.)

H. Constitution--Evidence of vigor or "doing ability" denoted by depth and fullness of heart, spring of ribs, width of chest floor, and substance of bone

I. Growthiness--Condition of having size and weight for age

J. Scale--Size of the animal as determined by skeletal structure

(NOTE: This should be independent of weight.)

K. Ruggedness--Quality of having large bones and frame

L. Broodiness--Combination of characteristics which indicate the female will be a good mother

(NOTE: This is used only with breeding stock.)

M. Breed character--Traits which denote one breed from another

(NOTE: Refers to characteristics of head, such as shape, length and dish of face, width of muzzle, shape of poll, set of ear, color markings and wool covering in sheep.)

INFORMATION SHEET

N. Hand--four inches; used as a unit of measure for horses

O. Horse--equine animal at least 14.2 hands or taller

P. Pony--equine animal less than 14.2 hands tall

Q. Sex character (breeding stock only)

   1. Femininity--Traits distinguishing a female from a male

      (NOTE: Femininity is indicated by refinement of head, neck, and shoulders.)

   2. Masculinity--Traits distinguishing a male from a female

      (NOTE: Masculinity is indicated by strength of jaw and muzzle, boldness and massiveness of the head, crest, thickness of neck, and overall development of forequarters.)

II. Steps in the livestock selection process

   A. Know the parts of the live animal

   B. Know the wholesale cuts of the animal

   C. Know what an ideal animal looks like

III. Parts of the beef, swine, sheep, and dairy animals

   A. Beef (Transparency 1)

      1. Poll
      2. Neck
      3. Crops
      4. Back
      5. Loin
      6. Hooks
      7. Rump
      8. Tail head
      9. Quarter
      10. Stifle
      11. Hock
      12. Shank (cannon bone)
      13. Hoof
      14. Flank
      15. Last rib (13th)
      16. Ribs
      17. Sheath
      18. Underline
      19. Fore flank
      20. Shank
      21. Dewclaw
      22. Coffin
      23. Pastern
      24. Fetlock
      25. Knee
      26. Elbow
      27. Brisket
      28. Shoulder
      29. Dewlap
      30. Shoulder vein
      31. Muzzle
      32. Nostril
      33. Nose
      34. Face
      35. Forehead
      36. Body

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B. Swine (Transparency 7)

1. Nostril
2. Snout
3. Ear
4. Poll
5. Neck
6. Shoulder
7. Back
8. Loin
9. Rump (hip)
10. Tail
11. Ham
12. Stifle
13. Hock
14. Hindleg
15. Dewclaw
16. Hind flank
17. Side
18. Sheath
19. Belly
20. Fore flank
21. Knee
22. Foreleg
23. Coffin
24. Pastern
25. Fetlock
26. Jowl
27. Cheek

C. Sheep (Transparency 13)

1. Mouth
2. Nose
3. Face
4. Forehead
5. Poll
6. Neck
7. Top of shoulder
8. Back or rack
9. Loin
10. Ribs
11. Rump
12. Hip
13. Dock
14. Leg of lamb
15. Stifle
16. Hock
17. Cannon bone
18. Hoof
19. Rear flank
20. Last rib
21. Belly
22. Body
23. Fore flank
24. Coffin
25. Pastern
26. Fetlock
27. Knee
28. Fore shank
29. Elbow
30. Breast
31. Shoulder

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D. Dairy cattle (Transparency 19)

1. Muzzle
2. Nostril
3. Nose
4. Face
5. Forehead
6. Poll
7. Horn
8. Neck
9. Withers
10. Crops
11. Back
12. Chine
13. Loin
14. Ribs
15. Hip
16. Rump
17. Thurl
18. Tail head
19. Pin bones
20. Rear udder attachment
21. Thigh
22. Stifle
23. Hock
24. Switch
25. Dewclaw
26. Hoof
27. Teats
28. Udder
29. Flank
30. Mammary veins
31. Barrel
32. Coffin
33. Pastern
34. Fetlock
35. Knee
36. Elbow
37. Brisket
38. Heart girth
39. Shoulder
40. Dewlap

E. Horses (Transparency 23)

1. Foretop (poll)
2. Mane (crest)
3. Withers
4. Back
5. Loin
6. Hip
7. Croup (rump)
8. Buttock
9. Thigh
10. Quarter
11. Hock
12. Fetlock (ankle)
13. Hoof
14. Coronet
15. Pastern
16. Cannon
17. Gaskin
18. Stifle
19. Rear flank
20. Underline
21. Barrel
22. Heart girth
23. Elbow
24. Chestnuts
25. Ergot
26. Quarter of hoof
27. Knee
28. Forearm
29. Arm
30. Chest
31. Shoulder
32. Neck
33. Throatlatch
34. Jaw
35. Muzzle
36. Lips (mouth)
37. Nostril
38. Nose
39. Forehead

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IV. Desirable and undesirable animals

A. Beef (Transparencies 2, 3, and 6)

B. Swine (Transparencies 8, 11, and 12)

C. Sheep (Transparencies 14, 17, and 18)

D. Dairy (Transparencies 20, 21, and 22)

E. Horses (Transparency 24)

V. Wholesale cuts of beef, pork, and lamb

A. Beef (Transparency 4)

1. Chuck
2. Rib
3. Loin
4. Rump
5. Round
6. Shank
7. Flank
8. Plate
9. Fore shank
10. Brisket

B. Pork (Transparency 9)

1. Jowl
2. Boston Butt
3. Back
4. Loin
5. Rump
6. Picnic
7. Side
8. Ham

C. Lamb (Transparency 15)

1. Leg
2. Sirloin
3. Loin
4. Rack
5. Shoulder
6. Fore shank
7. Breast

VI. Approximate yield percentage of a beef, lamb, and pork carcass

A. Beef (Transparency 5)

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1. Brisket--5%
2. Chuck--26%
3. Shank--4%
4. Rib--9%
5. Plate--8%
6. Short loin--8%
7. Flank--5%
8. Sirloin--9%
9. Round--23%

B. Pork (Transparency 10)

1. Jowl--4.5%
2. Boston butt--6.5%
3. Picnic--8.5%
4. Loin--18%
5. Spareribs--3%
6. Side--17.5%
7. Ham--21%

C. Lamb (Transparency 16)

1. Shoulders--24%
2. Shank--4%
3. Ribs--12%
4. Flank and Breast--13%
5. Loin--11%
6. Leg with sirloin on--33%

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VII. Comparative advantages terms and criticism terms for livestock selection

A. Terms for use in giving reasons on market steers

	Comparative Advantages	Criticisms
1.	General terms	
a.	Meatier, heavier muscled, more muscular, more expression of muscling	Light muscled
b.	More correctly finished	Overfinished, underfinished
c.	Trimmer	Fat, wasty
d.	More modern type	Old-fashioned
e.	Larger framed, more scale	Small framed, lacked scale
f.	More length of leg	Dumpy, short legged
g.	Longer bodied, stretchier	Short bodied, too compact
h.	Nicer balanced, more symmetrical	Poorly balanced
i.	Smoother, higher quality	Rough, low quality, coarse
j.	Straighter lined, tighter framed	Slack framed
2.	Conformation	
a.	Meatier topped	Narrow
b.	Meatier over the back and/or loin	Narrow over the back and loin
c.	More spring of rib	Flat-ribbed, narrow through fore-rib
d.	Fuller through the crops	Narrow over crops
e.	Stronger top	Weaker topped, down in top

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	Comparative Advantages	Criticisms
f.	Straighter top	High over loin, low behind shoulders
g.	Longer rump	Short rump
h.	Leveler rump	Droopy in the rump
i.	Thicker, meatier rump	Tapered or narrow rump
j.	Heavier, plumper, more bulging, meatier, more muscular, deeper, thicker quarter	Light, flat, shallow, narrow quarter
k.	Heavier muscled, more bulging, meatier in the stifle region	Lacks bulge or muscling through stifle
l.	Trimmer middled	Heavy or wasty middled
m.	Trimmer fronted (trimmer in brisket and dewlap)	Heavy fronted (or in brisket and/or dewlap)
n.	Wider fronted (wider through chest floor)	Narrow fronted
o.	Stands wider behind (or in front)	Stands close behind (or in front)
3.	Finish	
a.	Trimmer finished	Fat, wasty, overfinished
b.	Trimmer flank, brisket, over ribs	Wasty flank
c.	More correctly finished steer	Was overfinished, or underfinished
d.	More uniformly finished (covered)	Patchy finish
e.	Smoother finished	Patchy finish
f.	Firmer finished	Soft finish

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	Comparative Advantages	Criticisms
4.	Quality	
a.	Smoother fleshed, higher quality, freer of patchiness	Rough, low quality
b.	Straighter lined (top and bottom)	Slack framed, weak topped
c.	Smoother about hooks	Hooky or rough about hooks
d.	Smoother laid in at shoulders (nicer blending of neck and shoulders)	Rough, coarse, or wing-shouldered
e.	Smoother (neater) about tail head	Rough, patchy, or prominent about tail head
f.	Smoother finish	Rough, patchy finish
g.	Trimmer middled	Heavy, wasty middled
5.	Carcass	
a.	Would yield a meatier carcass	
b.	Would hang up a beefier, thicker, heavier muscled carcass	
c.	Would yield a carcass with a higher cutability	
d.	Would yield a trimmer more desirably finished carcass with less fat trim	
e.	Would yield a carcass with a higher percent of trimmed retail cuts	

B. Terms for use in giving reasons on breeding cattle

1. General terms--Same as for steers (emphasize correctness, balance, quality, and straightness of lines)

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Comparative Advantages	Criticisms
a. More correct structurally (on feet and legs and skeletally)	Lacked correctness
b. Larger, growthier	Small
c. Larger framed, more scale	Small framed, lacked scale
d. Longer bodied, stretchier	Short bodied, old-fashioned
e. More rugged (use with bulls)	Lacked ruggedness
f. More constitution	Lacked constitution

2. Conformation--Same terms as given for steers

3. Finish--Do not use the word "finish" on breeding cattle

   (NOTE: Trimness is certainly desirable in breeding cattle.)

4. Quality--Same as for steers

5. Correctness or soundness of feet and legs

a. Sounder, more correct	Unsound, lacked correctness
b. Stood more correctly or straighter on rear legs as viewed from rear	Bowlegged (out at the hocks), cow-hocked (stood close at the hocks)
c. Stood more correctly on rear legs as viewed from side, more desirable set to the hocks	Sickle-hocked (too much set to hocks), post-legged (too straight in the hock)
d. Stood straighter on front legs as viewed from side	Over at the knees (buck-kneed), back at the knees (calf-kneed)
e. Stood wider in front	Stood close at the knees (knock-kneed) or narrow fronted
f. Stood straighter in front	Toed in or toed out

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	Comparative Advantages	Criticisms
g.	More substance of bone, was heavier boned, had more rugged bone	Fine boned or light boned
h.	Higher quality, cleaner, flatter bone	Coarse, low quality boned
i.	Stood on stronger pasterns (front and/or rear)	Weak in the pasterns
j.	Nicer (freer, easier, more correct) walking (or moving)	Poor walking, stiff, short strided, spraddles, walks under, knuckles over

6. Breed and sex character

a.	More (Angus, Hereford, Shorthorn) breed character about head	Plain headed
b.	More feminine about head, cleaner, more refined about head and neck (heifers)	Coarse, lacked femininity
c.	More masculine, burlier about head and neck (bulls)	Lacked masculinity

C. Terms for use in giving reasons on market barrows

1. General terms

a.	Meatier, heavier muscled, more muscular, more expression of muscling	Light muscled
b.	Longer, longer sided, stretchier	Short, short sided
c.	Trimmer (cleaner)	Wasty, overfinished
d.	Firmer	Soft, flabby
e.	More correctly (desirably) finished	Overfinished

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	Comparative Advantages	Criticisms
f.	Nicer balanced, more symmetrical	Poorly balanced
g.	Smoother, higher quality	Low quality
h.	Tighter framed	Slack framed
i.	More scale	Short legged, dumpy
j.	More substance	Fine boned
2.	Conformation	
a.	Trimmer, cleaner and/or firmer in jowl	Heavy, wasty jowled
b.	Cleaner or trimmer about neck	Thick, coarse, wasty through neck
c.	Smoother laid in at shoulders, neater in shoulders	Rough, coarse, open about shoulders
d.	Bolder, fuller, more spring of rib	Flat-ribbed, lacked spring of rib
e.	Longer, smoother sided	Short, wrinkled in side
f.	Meatier and/or more muscular over shoulders, back, loin, and rump, more natural thickness and muscling over back, loin, and rump	Narrow, light muscled over shoulders
g.	More expression of muscling over the top	Light muscled
h.	More uniformly turned in the arch	Uneven in arch (low behind shoulders, steep rump)
i.	Stronger top	Weak top or arch
j.	Cleaner over the loin edge	Too much right angle spread

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Comparative Advantages	Criticisms
k. Longer in the rump (longer hammed or hooks up higher in the ham)	Short rumped (or short hammed)
l. Meatier in the rump or more flare of rump	Tapered or narrow through rump
m. Higher tail setting	Low tail setting, steep in the rump
n. Heavier, plumper, more bulging, fuller, meatier, more muscular, deeper, thicker ham	Light, flat, light-muscled, narrow ham
o. Trimmer, firmer, freer of wrinkles about base of ham (or through crotch of ham)	Wasty, soft, wrinkled about base of ham
p. Deeper ham	Shallow, cut up in ham
q. More bulge through stifle (or lower ham or base of ham)	Narrow through stifle or base of ham
r. More flare through the rump or ham	Narrow through rump or ham
s. Plumper, fuller through cushion of ham	Narrow through cushion of ham
t. Stood wider behind (or in front)	Stood narrow behind (or in front)
u. More length of leg	Short legged
3. Finish	
a. Trimmer (cleaner), more desirably (or correctly) finished	Wasty, overfinished
b. Firmer	Soft
c. Cleaner top	Too much finish down top, right angle spread over top

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Comparative Advantages	Criticisms
d. Firmer, cleaner, or freer of waste over shoulders, shoulder pocket, through side and base of ham and jowl	Soft, wasty, wrinkled over shoulders
e. Trimmer, firmer in underline	Soft, wasty in the underline
4. Quality	
a. Smoother, freer of wrinkles over shoulders and through side and base of ham	Wrinkled over shoulders
b. Neater laid in at shoulders	Rough, coarse, open in shoulders
c. Trimmer middle, trimmer underline	Wasty, heavy middled, or wasty underline
d. Cleaner, more refined about head and ear	Coarse, large head and/or ear
5. Carcass	
a. Would yield (or hang up) a meatier, heavier muscled carcass with a higher percent of the lean cuts or ham and loin	
b. Would yield a meatier, trimmer carcass with a higher ratio of lean to fat	
c. Would yield a trimmer, meatier carcass with less fat trim (or backfat)	
d. Would hang up a trimmer, less wasty carcass	
e. Would hang up a longer, trimmer carcass	

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D. Terms for use in giving reasons on breeding gilts

1. General terms (same as for barrows)

	Comparative Advantages	Criticisms
a.	More correct (on feet and legs)	Lacked correctness
b.	Larger, growthier	Small
c.	Larger framed, more scale	Small framed, lacked scale
d.	More length of leg	Short legged
e.	Broodier (as shown by depth of side, roominess of middle, and underline)	Lacked broodiness
f.	More rugged with more constitution (width of chest floor, depth heart, spring of rib)	Lacked ruggedness or constitution

2. Conformation--Same terms as for barrows

3. Finish--"Finish" is not mentioned in gilt or boar reasons

(NOTE: "Trimness" and "firmness" are certainly desired and are used in reasons terminology as in barrow terminology.)

4. Quality--Same as for barrows

(NOTE: Do not criticize gilts for a small amount of middle.)

5. Correctness or soundness of feet and legs

a.	Straighter front (or hind) legs as viewed from side (or behind)	Bowlegged (out at hocks), cow-hocked, sickle-hocked, over at knees (buck-kneed)
b.	Stood wider in front	Stood close at knees (knock-kneed) or close in front
c.	Stood straighter in front	Toed out, toed in front

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	Comparative Advantages	Criticisms
d.	Stood on straighter, stronger rear (or front) pasterns	Weak pasterns (front or rear)
e.	Stood on more substance of bone, was heavier boned, had more rugged bone	Fine boned or light boned
f.	Stood on higher quality, cleaner bone	Coarse, low quality bone
g.	Nicer (freer, easier, more correct) walking (or moving) gilt	Poor, stiff walking gilt

6. Breed and sex character

a.	Broodier about the underline	Lacks broodiness and/or prominence
b.	More prominent about the underline	Lacked prominence (or development) of underline, has inverted nipples
c.	Large number of nipples	Lacked number of nipples
d.	More evenly spaced nipples or underline	Poor spacing of underline
e.	Sounder underline	Unsound in the underline

E. Terms for use in giving reasons on market lambs

1. General terms

a.	Meatier, heavier muscled, more muscular, more expression of muscling	Light muscled
b.	Thicker, meatier topped	Narrow
c.	More desirably finished	Overfinished, underfinished
d.	Trimmer	Wasty, fat
e.	More modern type	Old-fashioned

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	Comparative Advantages	Criticisms
f.	More length of leg	Short legged, dumpy
g.	Longer bodied	Short bodied, too compact
h.	Nicer balanced, more symmetrical	Poorly balanced
i.	Firmer, harder handling	Soft
j.	Straighter lined, tighter framed	Slack framed
k.	Smoother, higher quality	Rough, low quality, coarse
2.	Conformation	
a.	Wider (thicker and/or meatier topped	Narrow
b.	More natural thickness and muscling over the top, wider (thicker and/or meatier) over rack, back, and loin	Narrow over rack
c.	More spring of rib	Flat-ribbed, narrow through fore-rib
d.	Straighter, stronger, firmer top	Weak topped, down in top
e.	Longer rump	Short rumped
f.	Leveler rump	Drooping in the rump
g.	Fuller at the dock	Tapered in the dock
h.	Thicker and meatier at the dock	Tapered, narrow at the dock
i.	Heavier, plumper, more bulging, meatier, more muscular, firmer, deeper, thicker leg	Light, flat, shallow, narrow, soft leg

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	Comparative Advantages	Criticisms
j.	Trimmer middled	Heavy or wasty middled
k.	Wider fronted, wider through chest floor or breast	Narrow fronted, narrow chest
l.	Stands wider behind (or in front)	Stands close behind (or in front)
m.	More length of leg	Dumpy, old-fashioned
3.	Finish	
a.	Trimmer	Fat, wasty, overfinished
b.	Trimmer flank, chest, crotch, over the ribs	Wasty in the crotch
c.	More desirably finished lamb	Was overfinished, or thin, underfinished
d.	More uniformly finished (covered)	Lacked uniformity of finish
e.	Harder or firmer handling (more desirable handling lamb)	Soft handling lamb
4.	Quality	
a.	Smoother, higher quality	Coarse, low quality
b.	Straighter lined (top and bottom)	Slack framed, weak top
c.	Smoother, neater in shoulders	Rough, coarse, or wing-shouldered
d.	Trimmer middled	Heavy, wasty middled
e.	Cleaner, more refined head and/or bone	Coarse about head and/or bone
5.	Carcass	
a.	Would yield a meatier, more muscular carcass	

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Comparative Advantages	Criticisms
b. Would hang up a thicker, heavier muscled carcass	
c. Would yield a trimmer, more desirably finished carcass with less fat trim	
d. Would yield a higher percent of leg and loin or trimmer retail cuts	

F. Terms for use in giving reasons on breeding ewes

1. General terms--Same as for market lambs (emphasize balance, quality, and straightness of lines)

a. More correctly structurally (on feet and legs and skeletally)	Lacked correctness
b. Larger	Small
c. Larger framed, more scale	Small framed, lacking scale
d. Deeper bodied, broodier, roomier middled	Shallow bodied
e. More rugged	Lacked ruggedness and substance
f. Showed more constitution	Lacked constitution

2. Conformation--Same as terms given for market lambs

3. Finish--Same as for market lambs (less emphasis)

4. Quality--Same as for market lambs

5. Correctness or soundness of feet and legs

a. Stood more correctly on feet and/or legs	Lacked correctness
b. Stood more correctly on rear legs as viewed from the rear	Bowlegged (out at the hocks), cow-hocked (stood close at the hocks)

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	Comparative Advantages	Criticisms
c.	Stood more correctly on rear legs as viewed from the side, more desirable set to the hocks	Sickle-hocked (too much set to the hocks), post-legged (too straight in the hocks)
d.	Stood straighter on front legs as viewed from the side	Over at the knees (buck-kneed), back at the knees (calf-kneed)
e.	Stood straighter in front as viewed from the front	Toed out or toed in
f.	Stood wider in front	Stood close at the knees (knock-kneed)
g.	More substance of bone, was heavier boned, had more rugged bone	Fine boned or light boned
h.	Higher quality, cleaner, flatter bone	Coarse, low quality bone
i.	Stood on shorter, straighter, or stronger pasterns (front and/or rear)	Long and/or weak in pasterns
6.	Breed and sex character	
a.	Showed more (Hampshire, Suffolk, Shropshire) breed character about the head	Plain headed
b.	Showed more femininity about the head	Coarse, lacked femininity
	Hampshire:	
c.	Was blacker about points (or face and/or ears)	Brown or light about points
d.	Was more open about the face	Too much cover over face
e.	Was freer from wool about the ears	Wooly about the ears

	Comparative Advantages	Criticisms
f.	Had longer more desirably set ears	Was short, droopy in the ears
	Suffolk:	
g.	Was blacker and cleaner about the face and ears	Was brown or wooly about head
h.	Was longer, cleaner, and more feminine about the head	Was short and plain headed
i.	Had longer and more desirable set to the ears	Had short, coarse, droopy, or erect ears
7.	Wool and skin	
a.	Pinker skin	Dark skinned
b.	Freer of black fiber	Carried excessive black fiber
c.	Denser fleece	Open fleeced
d.	Finer fleece	Coarse, hairy fleece
e.	Brighter, more lustrous fleece	Dull, dirty fleece
f.	More character of fleece	Lacked character of fleece

G. Terms for use in giving reasons on dairy cows

1. Mammary system

    a. Stronger fore-udder attachment
    b. More fore-udder attachment
    c. Squarer teat placement
    d. Nicer balanced udder
    e. More rear-udder development
    f. Stronger rear-udder attachment

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Comparative Advantages	Criticisms
g. More veining on the udder indicating an udder of higher quality	
h. Stronger central suspensory membrane	
2. General appearance	
a. More breed character in her head and neck	
b. Taller cow with more length and stretch	
c. Stronger in her chine	
d. Stronger in her loin	
e. More level in the rump	
f. Neater in her tail setting	
g. Straighter on her rear legs	
3. Body capacity	
a. Deeper in her chest	
b. Deeper in her rear ribs	
c. Longer barrel cow	
d. More spring of rib	
4. Dairy character	
a. Sharper in the withers	
b. More lean in the ribs	
c. Longer and more lean in the neck	
d. More lean in the thighs	
e. Sharper in her hips and pins	

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	Comparative Advantages	Criticisms
H.	Terms for use in giving reasons on horses	
1.	General Terms	
a.	All parts well developed and nicely blended together	Lack of balance and/or symmetry
b.	Short coupling	Long in the coupling
c.	High carriage of head, active ears, alert disposition and beauty of conformation	Lacking style and beauty
d.	More rugged (use with stallions)	Lacking ruggedness
2.	Conformation	
a.	A deep wide chest	Narrow chested
b.	Relatively large hoofs	Small hoofs
c.	Wide and muscular over the croup and through the rear quarters	Lacking width and length over the croup and through the rear quarters
d.	Well proportioned, refined broad head with a full forehead and great width between the eyes; a broad and strong muscled jaw	Plain headed; weak in the jaw
e.	Fairly long necked, clean-cut about the throat latch	Short, thick neck
f.	Sloping shoulders (about 45 degree angle)	Straight in the shoulders
g.	Well muscled arm, forearm, and gaskin	Light muscled arm, forearm and gaskin
h.	Ample middle due to long, well-sprung ribs	Lacking middle
i.	Well let down in the rear flank	High cut rear flank or "wasp waisted"

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Comparative Advantages	Criticisms
3. Quality	
a. Straight lined, tight framed	Slack framed
b. Short, strong back and loin with a nicely turned and heavily muscled croup, a high well set tail head, withers clearly defined and of the same height as the high point of the croup	Sway backed; steep crouped
4. Breed and Sex Character	
a. Showing plenty of breed type, size, color, shape of body and head, and action true to the breed represented	Lacking quality and breed type
b. Refinement and femininity in the brood mare	Lacking femininity
c. Boldness and masculinity in the stallion	Lacking masculinity
5. Correctness or Soundness of Feet and Legs	
a. Straight true and squarely set front legs	Crooked front legs, pigeon toed, splay-footed
b. Straight true and squarely set hind legs	Crooked hind legs, cow-hocked, splay-footed

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VIII. Suggestions for oral reasons

1. Oral reasons--Give the opportunity to defend the placing of the class and to specifically tell why each placed as it did

   (NOTE: Reasons should be accurate and given in a manner which is easily understood.)

2. Gains from giving reasons

   a. Ability to organize system of analyzing a class of livestock

   b. Ability to think more clearly on your feet

   c. Ability to state thoughts more clearly

   d. Improvement of speaking poise

   e. Improvement of memory

3. Important points in giving reasons

   a. Accuracy--See the obvious and important points in the class and discuss them accurately and completely

   b. Delivery--Present in a manner that is pleasant to hear and clear and easy to follow

      (NOTE: Speak slowly and clearly, in a conversational tone, yet loudly enough to be understood and to give some "conviction" to your reasons. You should stand 6-8 feet from the judge, standing erect, feet slightly spread, and with your hands behind your back. A poor delivery will probably result in a low score regardless of the accuracy of your reasons.)

   c. Bring out the important and general points first; follow with the more specific and detailed points (much like a newspaper story)

   d. Completeness--Bring out all the major differences in your reasons

   e. Length--Should never be over two minutes in length

INFORMATION SHEET

f. Terms--Know the meaning of the terms you use

(NOTE: For the purpose of your reasons, a class of four animals is divided into three pairs: a top pair, a middle pair, and a bottom pair. Follow the basic outline for a set of reasons for a placing of 1-2-3-4.)

1) Opening remarks

   a) Give name of class and how you placed it

   b) Give criticisms and outstanding good points

   (NOTE: In some cases a general statement about the entire class may be more applicable.)

2) Top pair

   a) Give reasons for placing 1 over 2, using comparative terms

   b) Give grants for 2 over 1, using comparative terms to point out advantages of 2 over 1

   (NOTE: In close placings, several grants would be desirable as long as they are true.)

   c) Give criticisms of 2, using descriptive terms

   (NOTE: Always criticize an animal on its own merits rather than comparing him to the animal placed above him.)

3) Middle pair

   a) Give reasons for placing 2 over 3

   b) Give grants for 3 over 2

   c) Give criticisms of 3

4) Bottom pair

   a) Give reasons for placing 3 over 4

   b) Give grants for 4 over 3

INFORMATION SHEET

c) Give criticisms of 4

(NOTE: Do not use a great many terms in close succession. Example: "1 was a typier, thicker quartered steer than 2.")

4. Words and phrases that should be avoided

   a. Animal or individual--Say "barrow," "gilt," "heifer," "mare"

   b. It--Always use "he" or "she"

   c. I would like to see--Point out the fault directly

      Example: "I criticize 2 because he was narrow over the top."

   d. Lacks or lacked--When possible, point out the fault directly

      Example: Instead of saying "4 lacked depth," say "I criticize 4 because he was shallow."

   e. Kind of or type of (steer, barrow, etc.)

      Example: Instead of "a smoother type of barrow" it should simply be "smoother barrow"

   f. Was a heifer that was

      Example: Say "One was a larger heifer."

   g. I placed the number 1 steer over the number 2 steer

      Example: Say "I placed 1 over 2."

   h. For these reasons I place this class--Unnecessary statement

      (NOTE: Conclude your reasons with the criticisms of the bottom animal.)

INFORMATION SHEET

B. Sample reasons

1. Hampshire barrows

I placed this class of Hampshire barrows 1-2-3-4. One was the longest sided, trimmest barrow in the class, although I fault him for being weak in his top.

In the top pair I placed one, the off-belt barrow, over two because one was a longer, stretchier barrow that was more correct in his amount of finish than two. One was trimmer in his jowl, firmer and cleaner through his shoulders, and cleaner down his top than two. Also, one was trimmer and firmer through his side and trimmer about his middle than two. Because of one's advantage in trimness he should yield a carcass with a higher percent of lean cuts and less fat trim. I would concede that two was a heavier muscled barrow that had more thickness through the center of his ham than one. However, I fault two, and placed him second for being a short-sided barrow that was wasty through his jowl and shoulders.

In the middle pair I placed two over three because two was a nicer balanced, heavier muscled barrow than three. Two had more natural spread and muscling over his back and loin, was stronger and more evenly turned in his top, and was longer in his rump. Furthermore, two had more flare to his rump and was much wider and meatier through his stifle than three. Also, two stood wider behind and showed more evidence of muscling through his shoulders. Two should hang on the rail a meatier, heavier muscled carcass with a greater percent of high priced cuts. I grant that three was a smoother, higher quality barrow that showed more scale than two, but I fault three and placed him third because he was a light muscled barrow that narrowed through his ham.

In the bottom pair, I placed three over four, easily, because three was a much trimmer, cleaner barrow that showed more scale and stood on more length of leg than four. Three was a longer sided barrow that was cleaner down his top and more desirably turned over his loin edge. Furthermore, three was trimmer through his side and underline and through the crotch of his ham. Three will hang up a longer, trimmer carcass with a higher ratio of lean to fat. I realize that four was thicker through his lower ham, but I fault four and placed him last as he was a soft, overfinished barrow that was wasty through his middle and jowl and was short in his side and should yield the fattest, wastiest carcass of any barrow in the class.

INFORMATION SHEET

2. Holstein cows

I place this class of Holstein cows 3-4-1-2. I chose three as my top cow and placed her over four, considering this a rather easy placing, because three excels four in dairy character and general appearance. She has a longer and leaner neck, is sharper in the withers, and is leaner in the thighs. She is also much stronger in her back and loin, more level from hips to pins, neater in her tail setting, and stands on a much straighter pair of rear legs. She is deeper in the chest and has more balance to the udder with a more even teat placement.

However, I would grant that four is deeper in the rear rib with a little higher and wider rear-udder attachment. I would like to see my top cow, three, with a little more stretch and length of barrel.

In my middle pair, four goes over one, another rather easy placing. Four excels one in body capacity and mammary system being much deeper in her rear rib and having more spread of rib. Her udder extends much higher and stronger in rear-udder attachment with more rear udder development and a neater teat placement. I grant that one stands on a straighter pair of rear legs that are stronger in the pasterns.

In my bottom pair, I placed one over two. I considered this a very close placing, but one excels two in general appearance having a little more style and balance, more breed character in her head and neck, and a straighter pair of rear legs. One also excels two in dairy character being sharper in the withers, a little more lean in the neck, and a little wider in the ribs.

I grant that two excels one in body capacity having a greater spring and spread of rib and being deeper in both the chest and rear ribs, but I placed her last because she lacks the overall balance of one. She is a little too short and thick in her neck, and like one, her udder is unbalanced with weak fore and rear udder attachments.

INFORMATION SHEET

3. Lambs

I placed this class of Dorset ewes 1-4-3-2. In the top pair, I placed 1, the outstanding ewe in the class, over 4 as 1 was a larger growthier ewe with more volume than 4. In addition, 1 was a heavier muscled ewe with more constitution and capacity than 4. One also stood on more bone and had a more desirable set to her hocks than 4. I grant that 4 exhibited more breed character and feminity about her head than 1, but I fault 4 and placed her second for being a small, light muscled ewe that was somewhat sickle-hocked.

In the middle pair, 4 was placed over 2 as 4 was a nicer balanced, straighter-lined ewe that was sounder in her structure than 2. Four was straighter and stronger over her top, longer and more level in her rump, and although she was sickle-hocked, 4 was sounder in the angle of her hock than 2. In addition, 4 was cleaner through her brisket and showed more Dorset breed character than 2. I would concede that 2 was a larger ewe that showed more depth of heart and had particularly more inside muscling to her leg than 4. Two is faulted and placed third, however, as she was droopy in her rump and too straight through her hocks.

In the bottom pair, I placed 2 over 3 as 2 was a growthier and more muscular ewe than 3 with decidedly more ruggedness and body capacity. I realize that 3 was a straighter lined, trimmer ewe than 2, but I criticize 3 and placed her last as she was a narrow, light muscled ewe that lacked the size, constitution, and capacity of the other ewes in the class.

4. Steers

I placed this class of crossbred steers 2-4-1-3. I placed 2 over 4 because he was a thicker, more muscular steer and would yield the meatiest carcass of any steer in the class. Number 2 showed evidence of more natural muscling and thickness in his round. Number 2 was longer from his hooks to his pins, a stronger topped steer when viewed from the side, and would yield a meatier, higher grading carcass and would have a higher dressing percentage. I grant number 4 was cleaner through the brisket, but I criticize number 4 for carrying an excess of finish. In the middle pair, I placed 4 over 1 because he was a larger, growthier, more uniformly finished steer. Number 4 showed more evidence of natural muscling and thickness in his shoulders and down his top. Number 4 was a longer rumped steer. I would concede that 1 was a cleaner steer that would yield a carcass with less fat trim, but I criticize 1 for being rough in his finish. In the bottom pair, I placed 1 over 3 because he was a stronger topped, cleaner steer that would yield a carcass with less fat trim. Number 1 was longer in the rump with more natural thickness through his shoulders, top, rump, and round. However, I grant 3 carried more finish and would yield a higher dressing percentage.

INFORMATION SHEET

5. Quarter Horse Mares

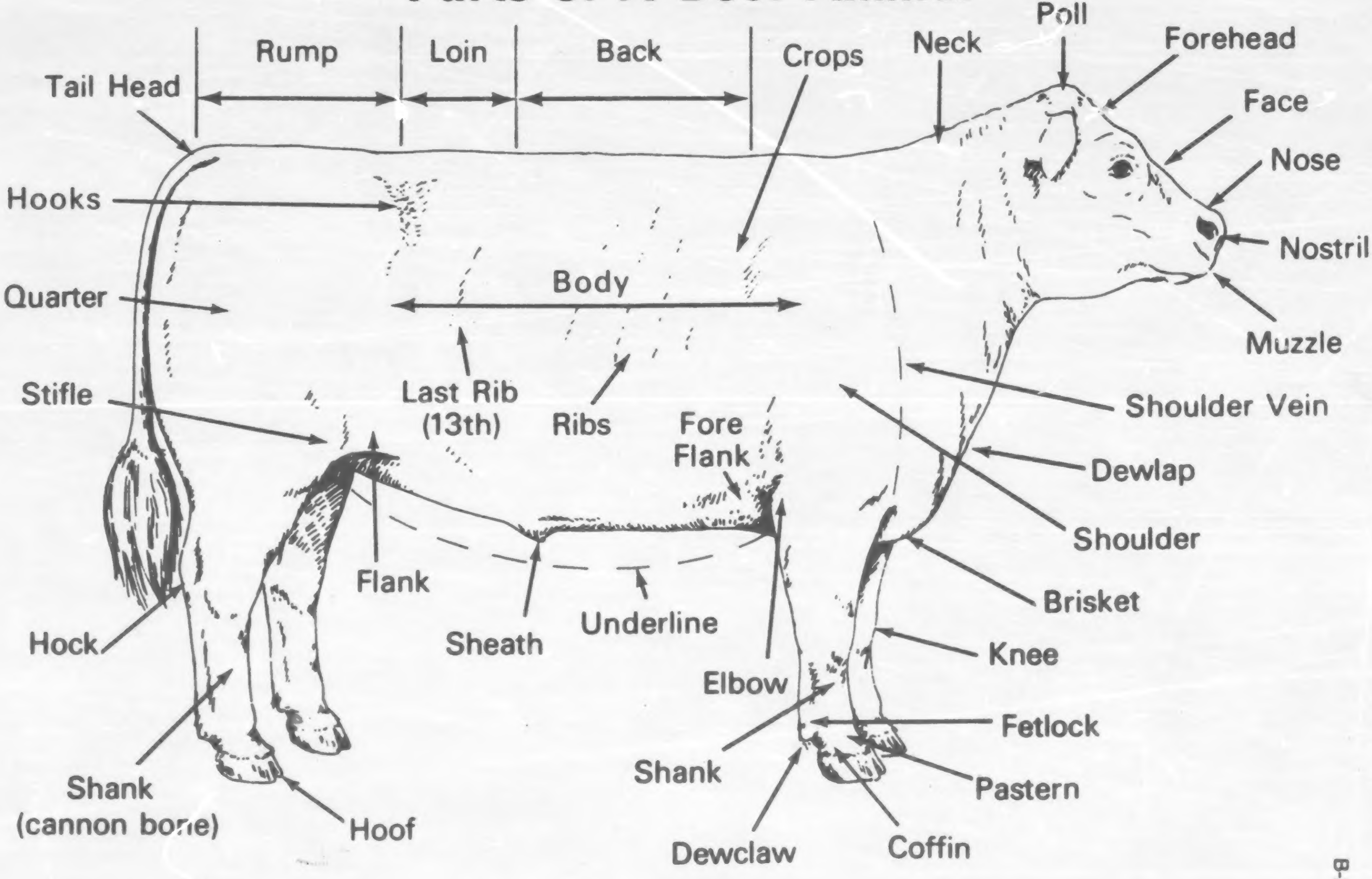
I placed the Quarter Horse mares 3, 1, 2, 4 with a close decision on the two sorrel mares, 2 and 4. Although 1 was neater and more expressive in her head, I placed 3 over 1 mainly because of her size, better balance, stronger muscle and straighter legs. The grey mare, 3, was taller, and specifically, she was longer in her slimmer neck that set on a more sloping shoulder than 1. She was deeper in her girth and rear rib and was stronger coupled with more driving power to her loin, longer croup and stifle than the bay mare, 1. The grey was stronger, longer and smoother muscled about her forearm and inner gaskin and traveled straighter and longer than 1. She also stood with more cusion to her pasterns and was flatter boned and more shapely about her feet than the bay. However, the grey mare was plainer headed and lighter boned than 1.

I placed 1 over 2 rather easily as she was better balanced and stronger made. One was particularly longer in her neck, shoulder, croup, stifle and gaskin than 2. The bay was also sharper in her wither and deeper in her girth than 2 and stood on flatter and heavier bone. She trotted longer with more decision than 2. However, I faulted 1 for being deeper in her neck and more pinched in her heels and standing and traveling splayed in front as compared to the grey.

In a closer bottom pair, I placed 2 over 4. Even though I quickly admit that the blaze faced mare was larger, heavier muscled and more rugged, I placed 2 over her mainly as she was a better balanced, sharper mare with more Quarter Horse mare character. The bright sorrel mare was cleaner necked and sharper withered and also more sloping in her shoulder and pasterns. the smaller mare, 2, was longer muscled, stronger topped with a neater hip than 4 and was moving more correctly on her hind legs. I criticized 2 primarily as she was small, finer boned and lighter muscled than the other mares in the class.

Even though 4 was big, rugged and heavy muscled, I left her bottom because she was poorly balanced, rather steep and coarse. The blaze faced mare was Roman nosed, thick necked, round in her withers and low backed. She was thick made but short and bunchy muscled and round and coarse in her bone. She was heavy moving and steep in her shoulder and pasterns and short strided. She was simply too old fashioned and drafty to place any higher in this class of Quarter Horse mares.

Parts of A Beef Animal

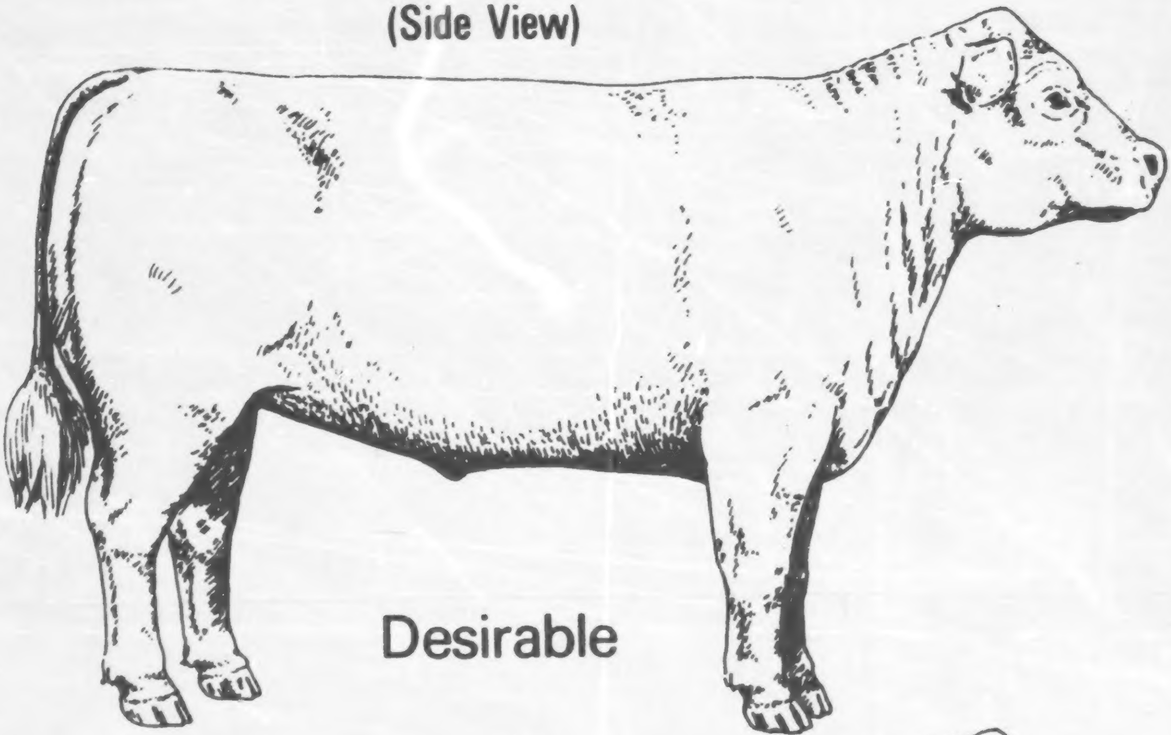

Rump
Loin
Back
Crops
Neck
Poll
Forehead
Tail Head
Face
Nose
Hooks
Nostril
Body
Quarter
Muzzle
Stifle
Last Rib (13th)
Ribs
Fore Flank
Shoulder Vein
Dewlap
Shoulder
Flank
Brisket
Sheath
Underline
Hock
Knee
Elbow
Fetlock
Shank
Shank (cannon bone)
Pastern
Hoof
Dewclaw
Coffin

B-219-B

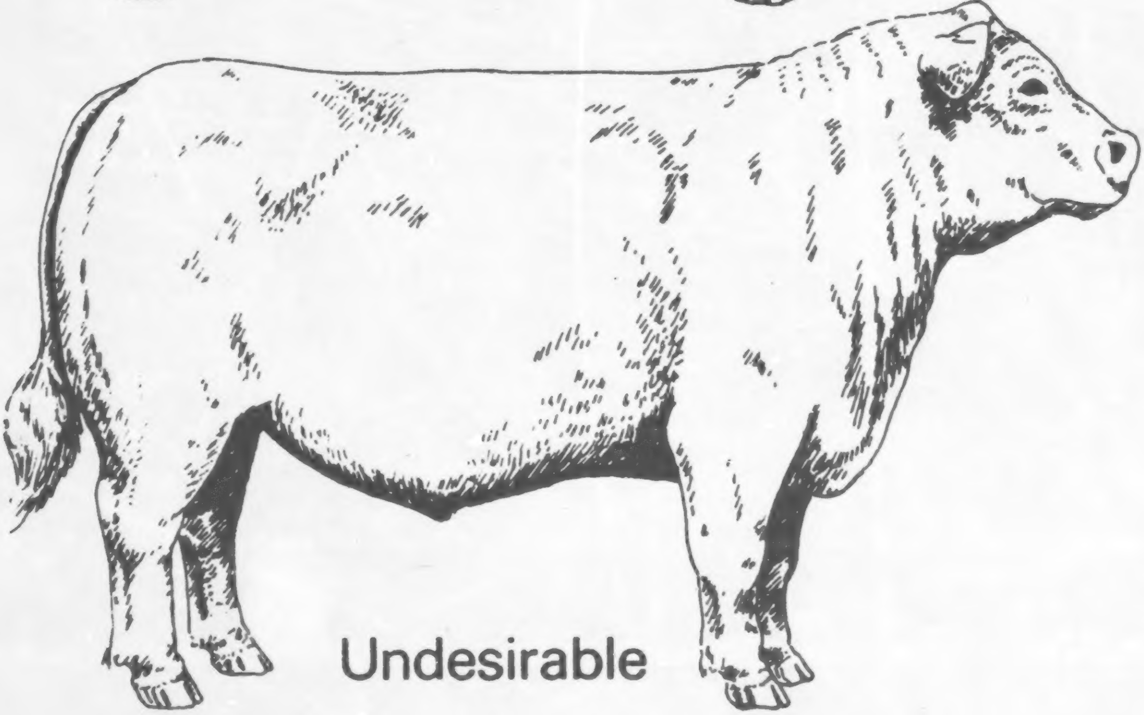
B-221-B

Desirable and Undesirable Beef Animals

(Side View)



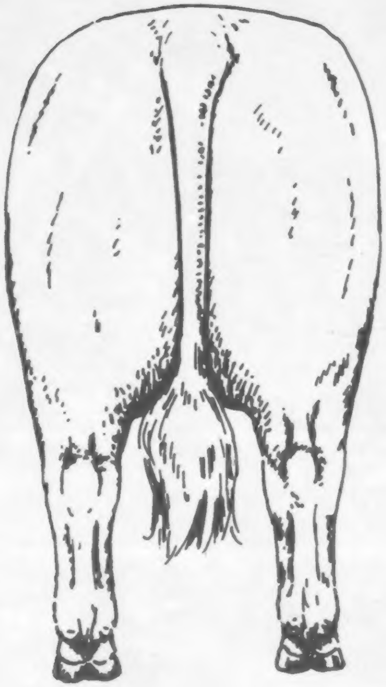
Desirable



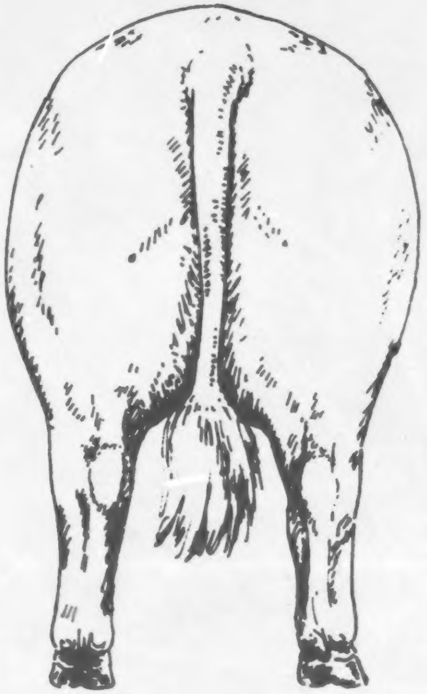
Undesirable

Desirable and Undesirable Beef Animals

(Rear View)

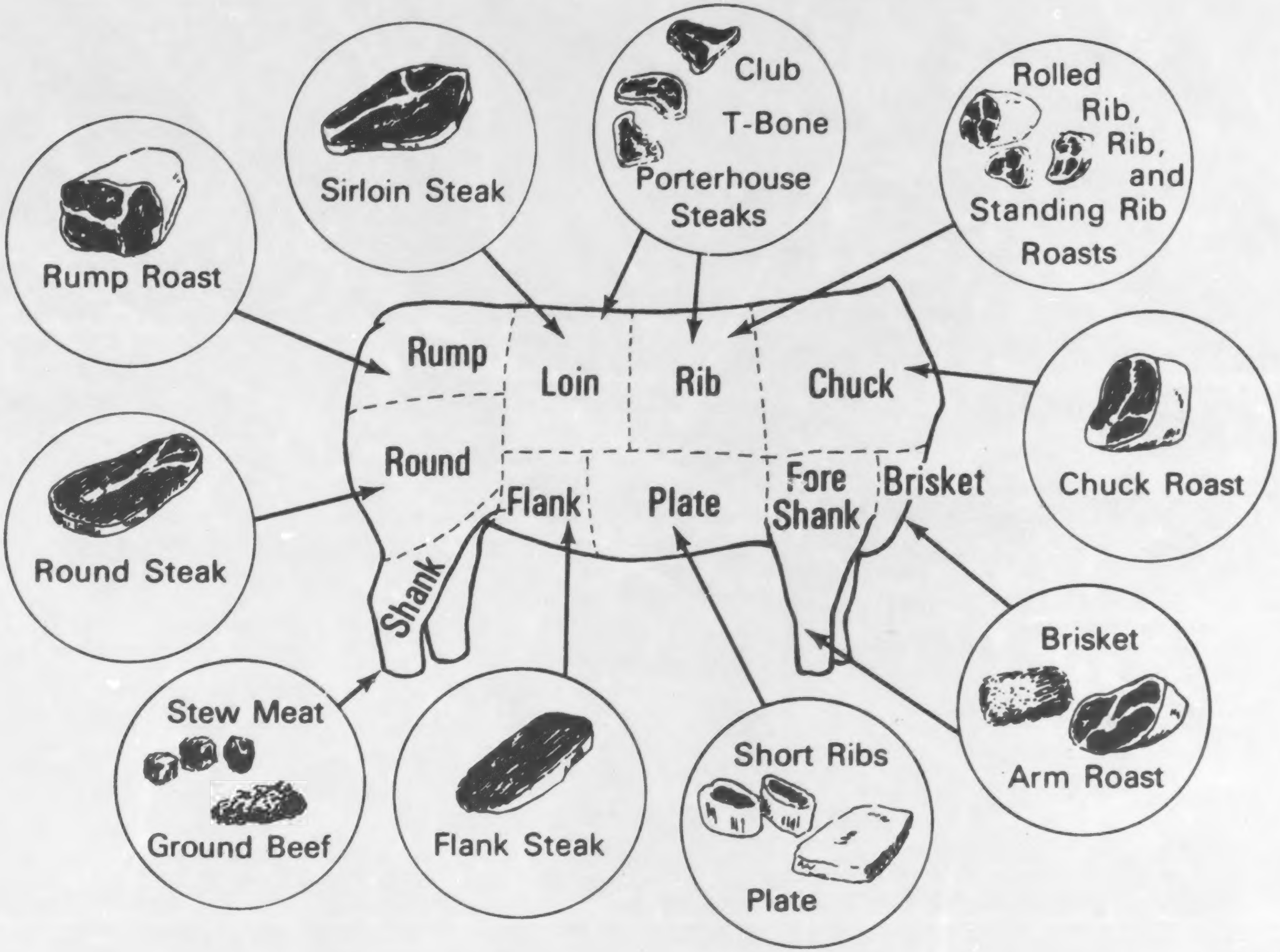


Desirable



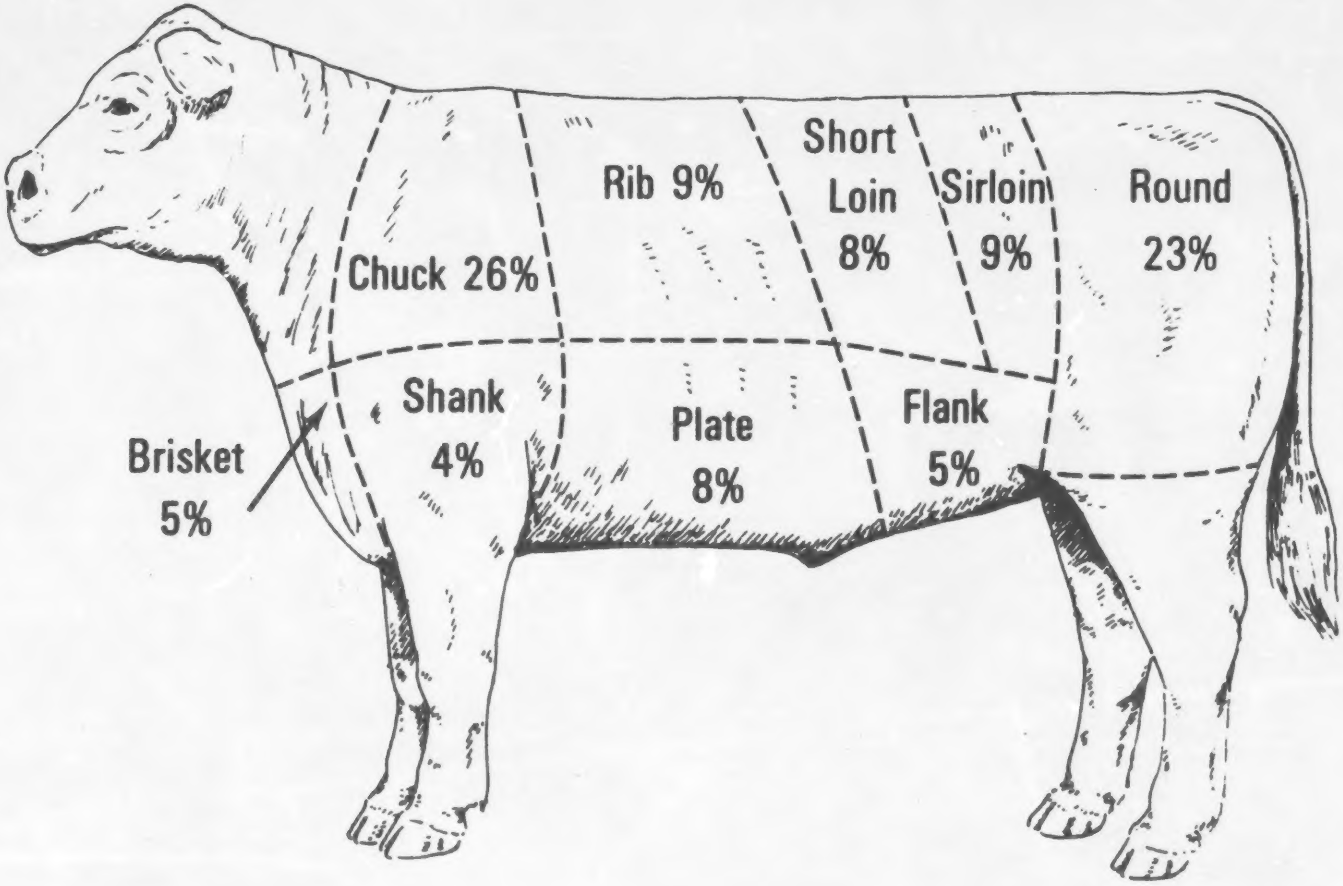
Undesirable

Wholesale Cuts of Beef

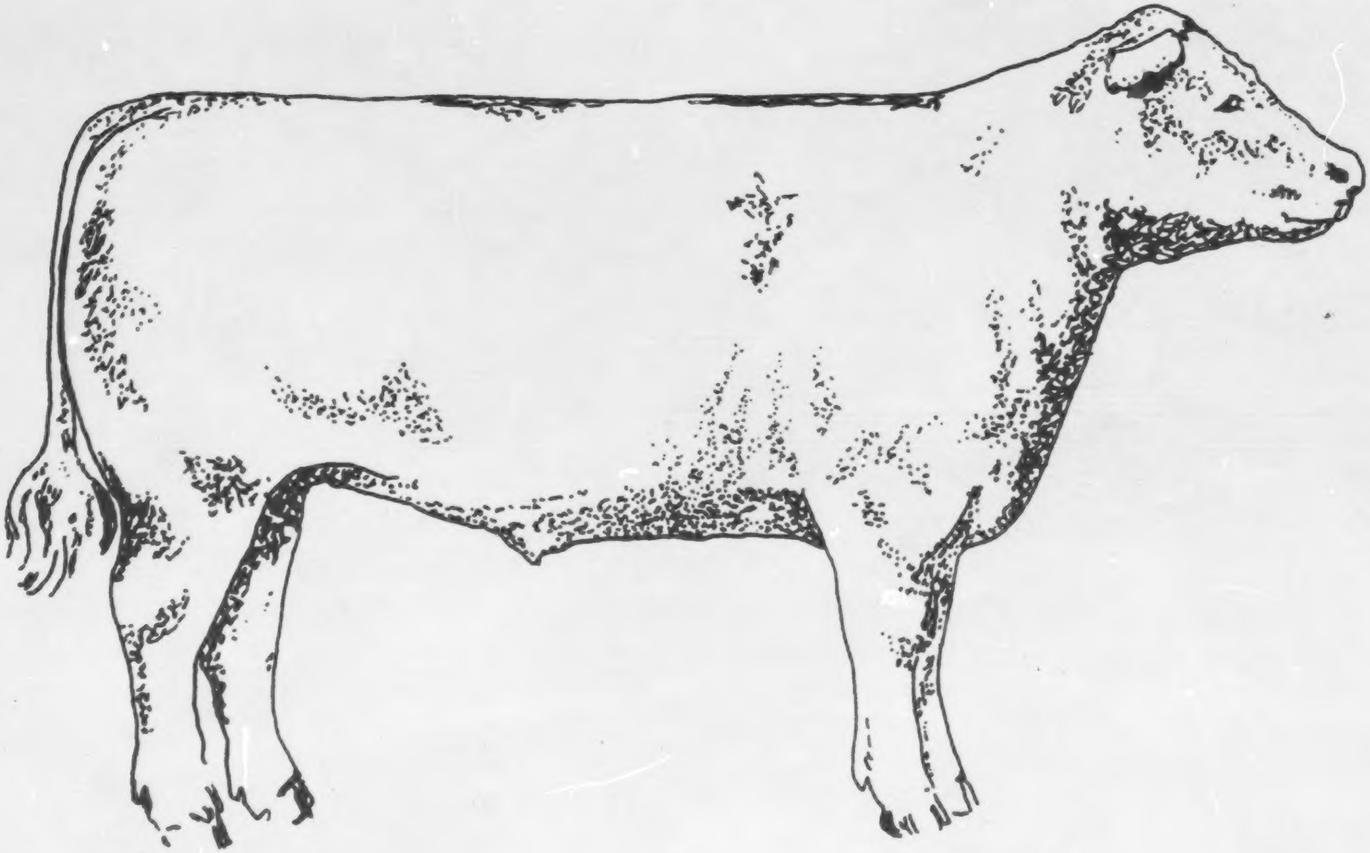

Sirloin Steak
Club
T-Bone
Porterhouse Steaks
Rolled Rib, Rib, and Standing Rib Roasts
Rump Roast
Rump
Loin
Rib
Chuck
Chuck Roast
Round
Round Steak
Flank
Plate
Fore Shank
Brisket
Shank
Brisket
Arm Roast
Stew Meat
Ground Beef
Flank Steak
Short Ribs
Plate

B-225-B

Approximate Yield Percentage of a Beef Carcass

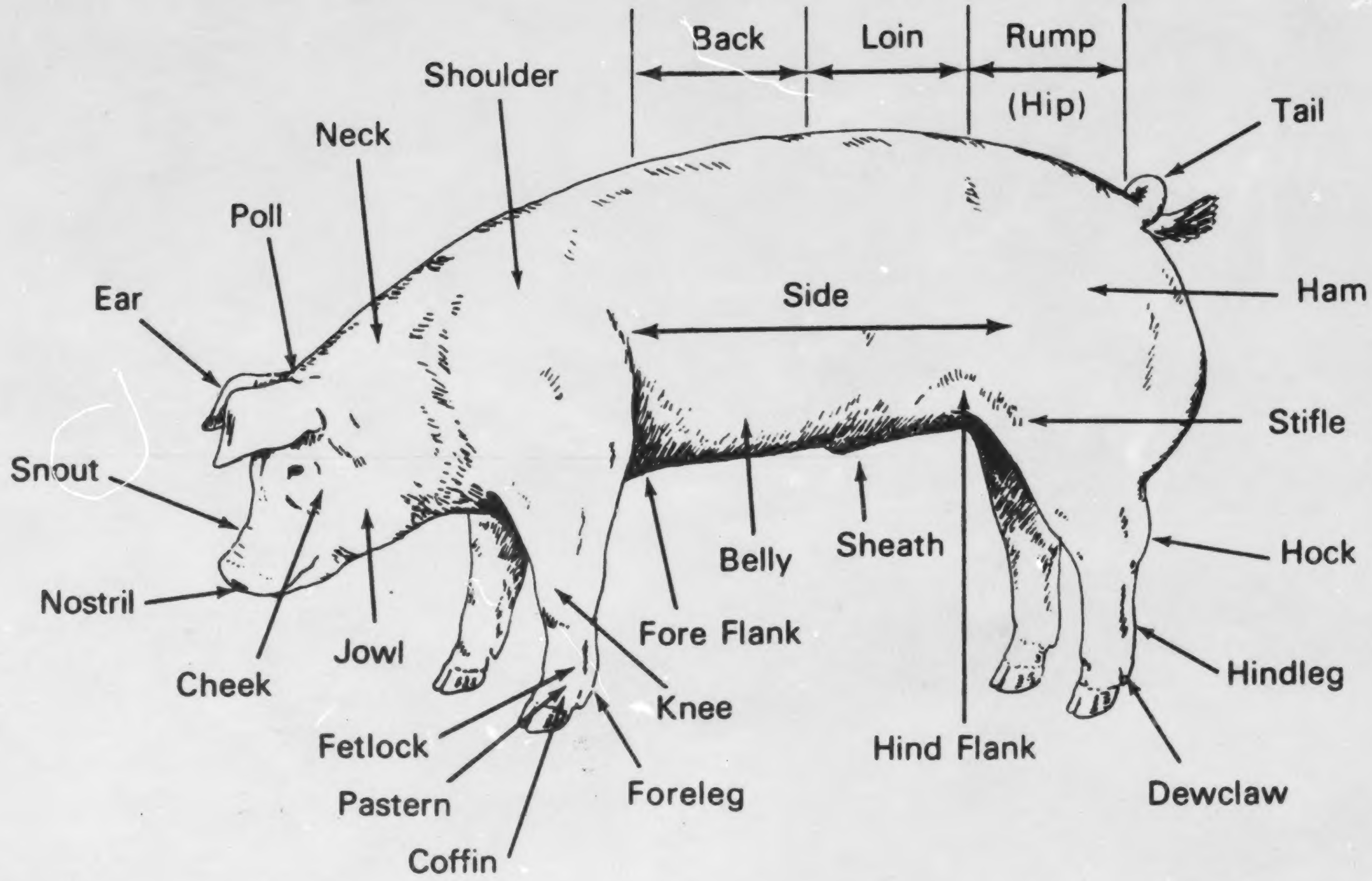

Short
Loin
8%
Rib 9%
Sirloin
9%
Round
23%
Chuck 26%
Shank
4%
Plate
8%
Flank
5%
Brisket
5%

Outline of a Steer



Source: Omaha Curriculum Guide

Parts of A Swine

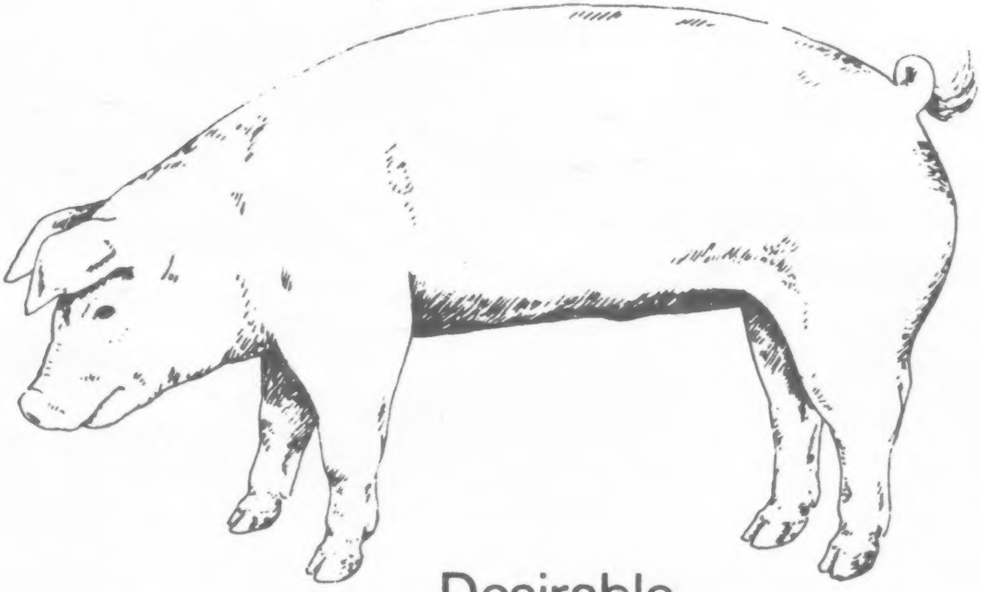

Back
Loin
Rump
(Hip)
Shoulder
Tail
Neck
Poll
Ear
Side
Ham
Stifle
Snout
Nostril
Cheek
Jowl
Belly
Sheath
Fore Flank
Knee
Hock
Hindleg
Fetlock
Pastern
Coffin
Foreleg
Hind Flank
Dewclaw

TM 7

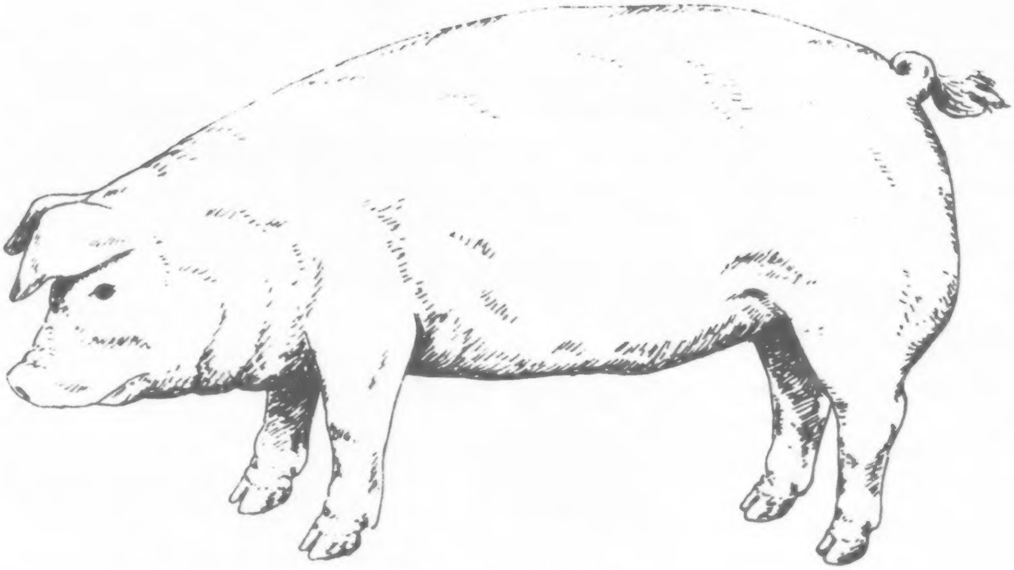
B-231-B

Desirable and Undesirable Barrows

(Side View)

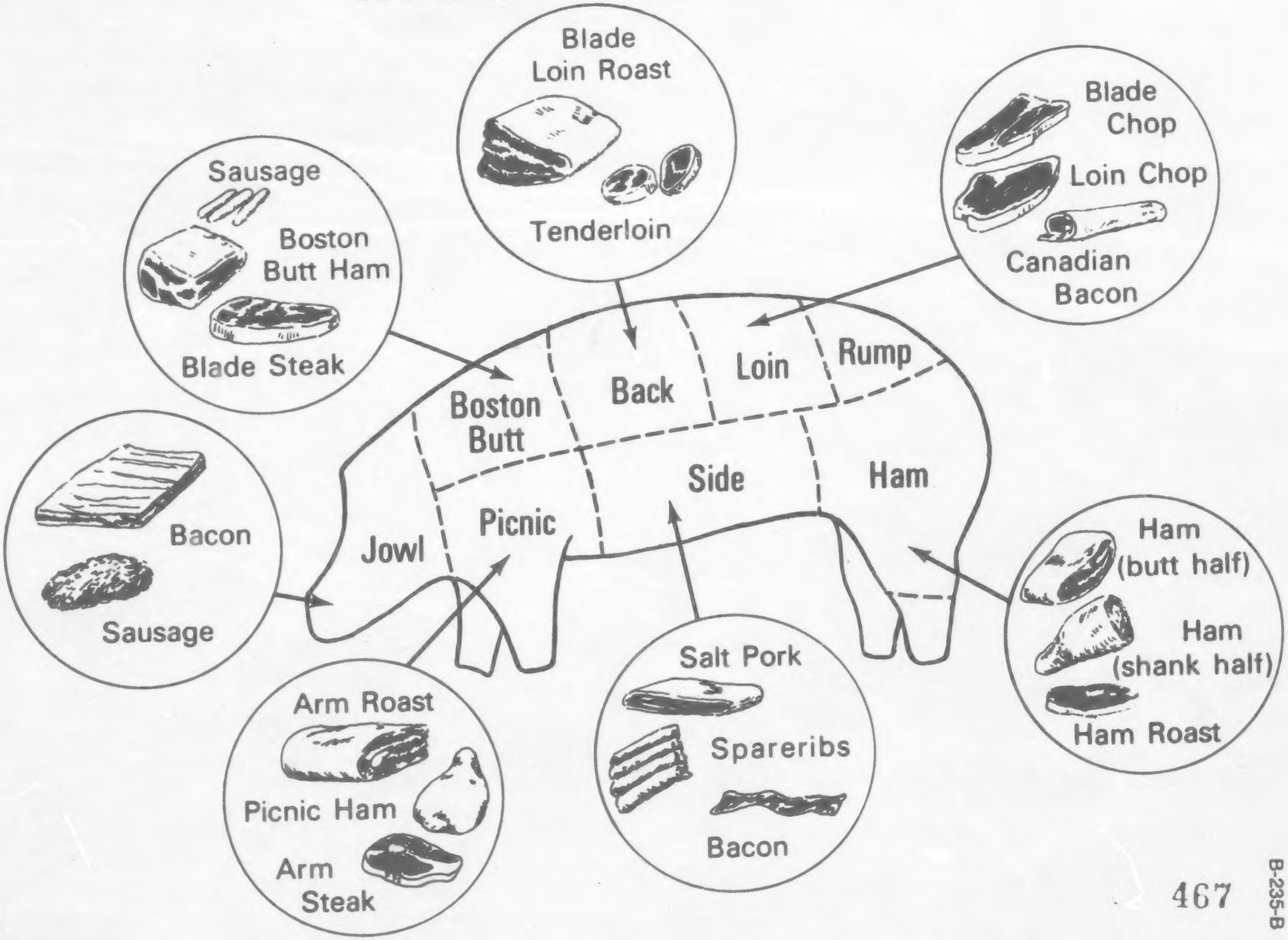


Desirable

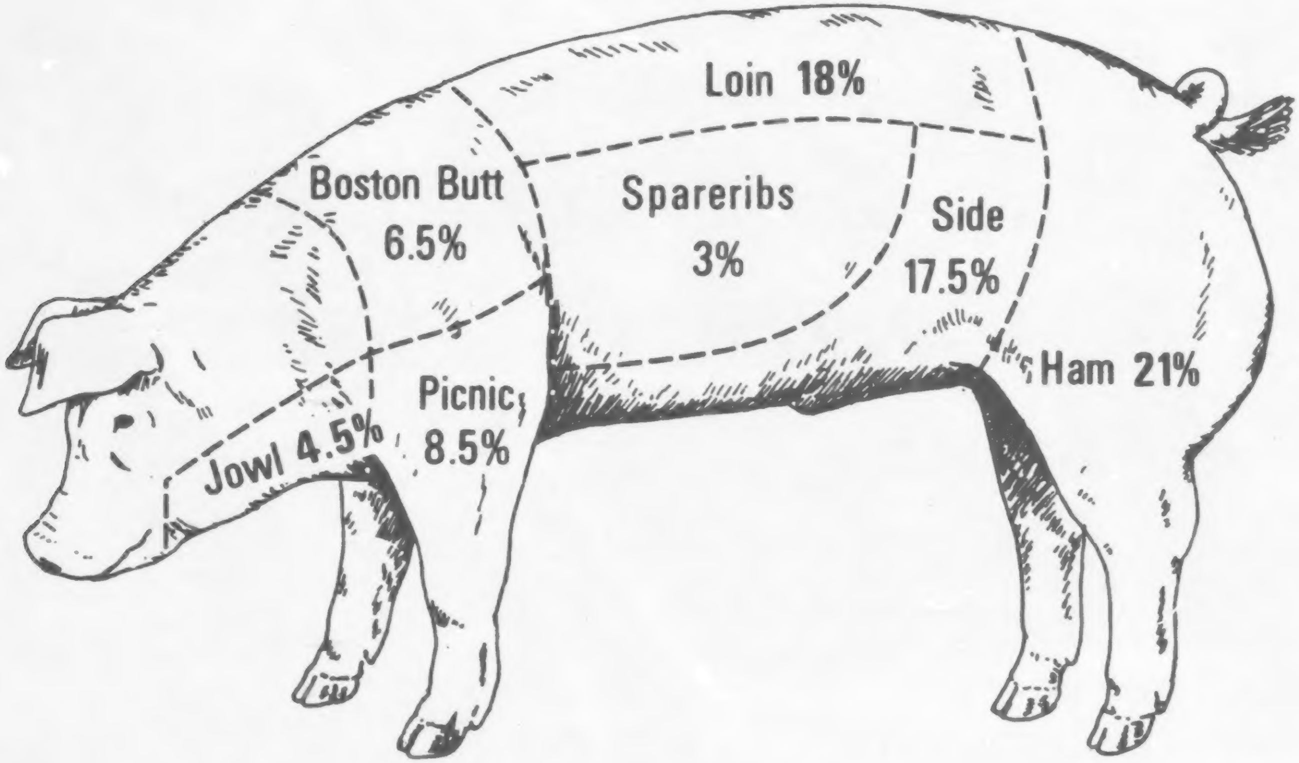


Undesirable

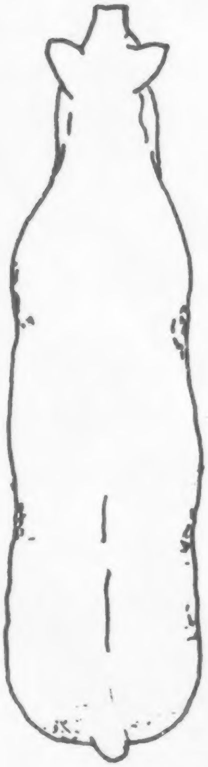
Wholesale Cuts of Pork

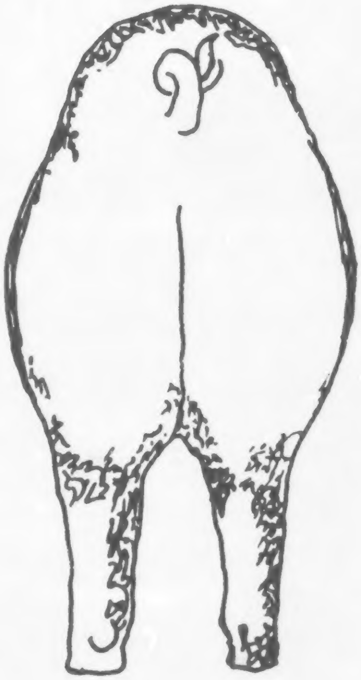

Blade
Loin Roast
Tenderloin
Blade
Chop
Loin Chop
Canadian
Bacon
Sausage
Boston
Butt Ham
Blade Steak
Boston
Butt
Back
Loin
Rump
Bacon
Sausage
Jowl
Picnic
Side
Ham
Ham
(butt half)
Ham
(shank half)
Ham Roast
Arm Roast
Picnic Ham
Arm
Steak
Salt Pork
Spareribs
Bacon

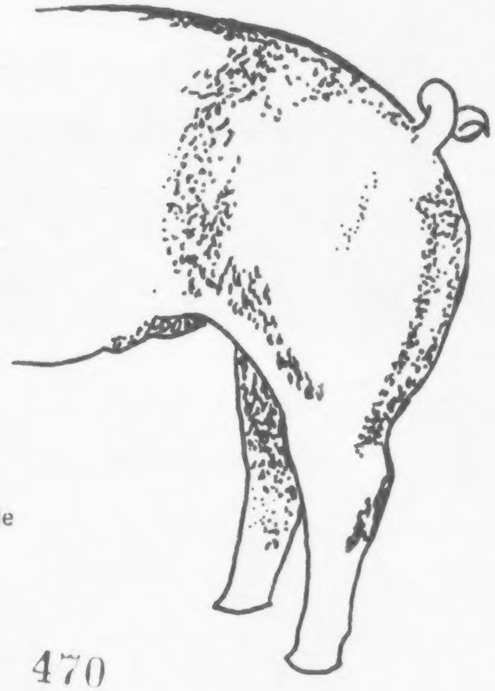
Approximate Yield Percentage of a Swine Carcass


Loin 18%
Boston Butt 6.5%
Spareribs 3%
Side 17.5%
Ham 21%
Picnic 8.5%
Jowl 4.5%

Indications of Muscling in Swine

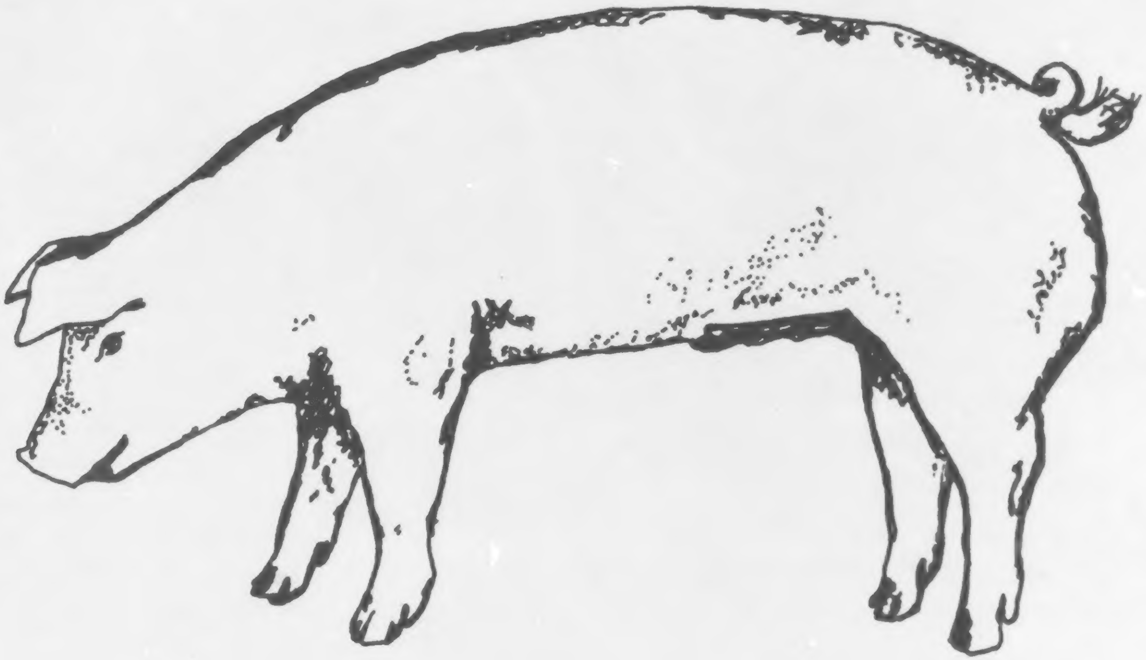






Source: Omaha Curriculum Guide

Outline of a Hog

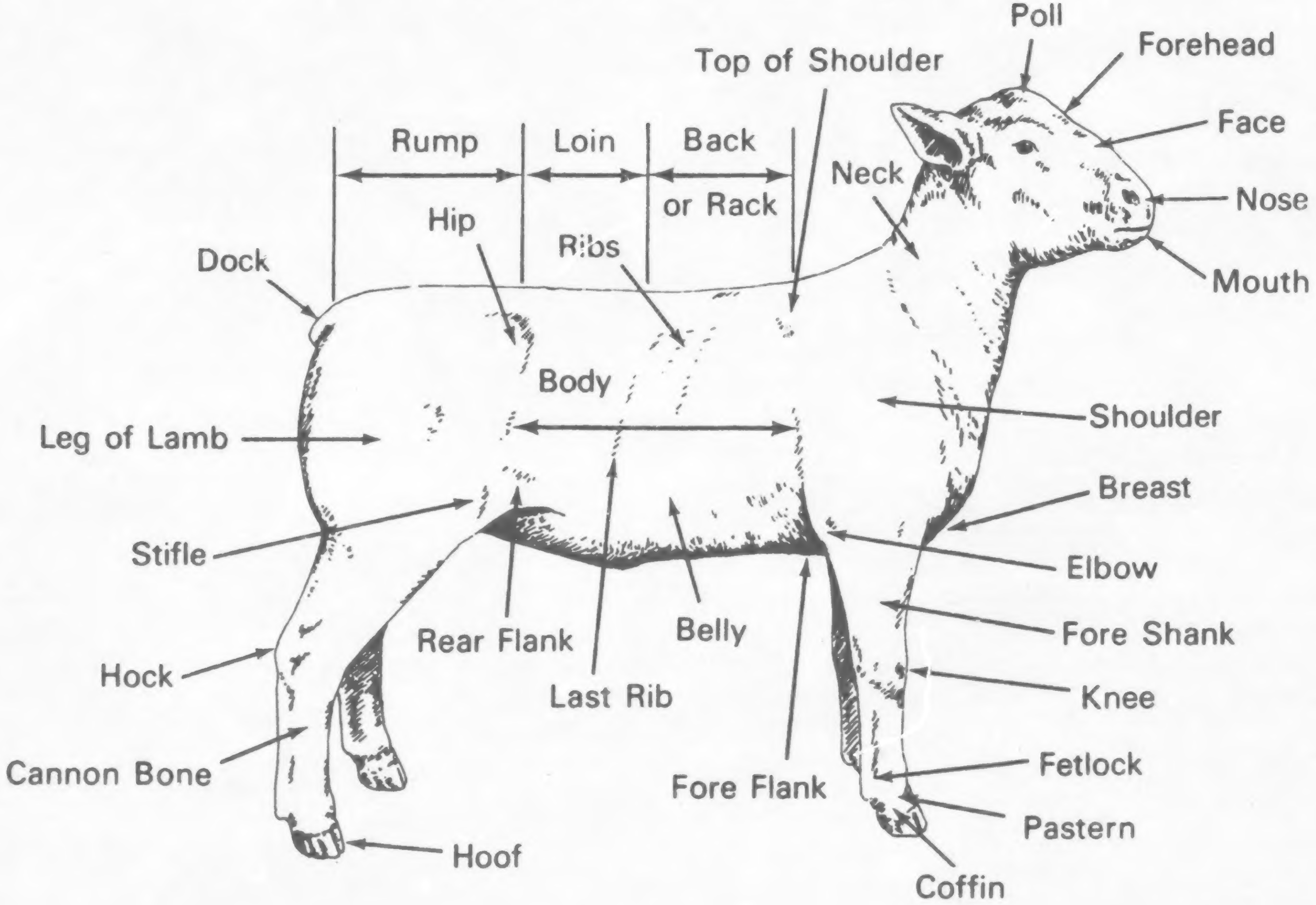


Source: Omaha Curriculum Guide

TM 12

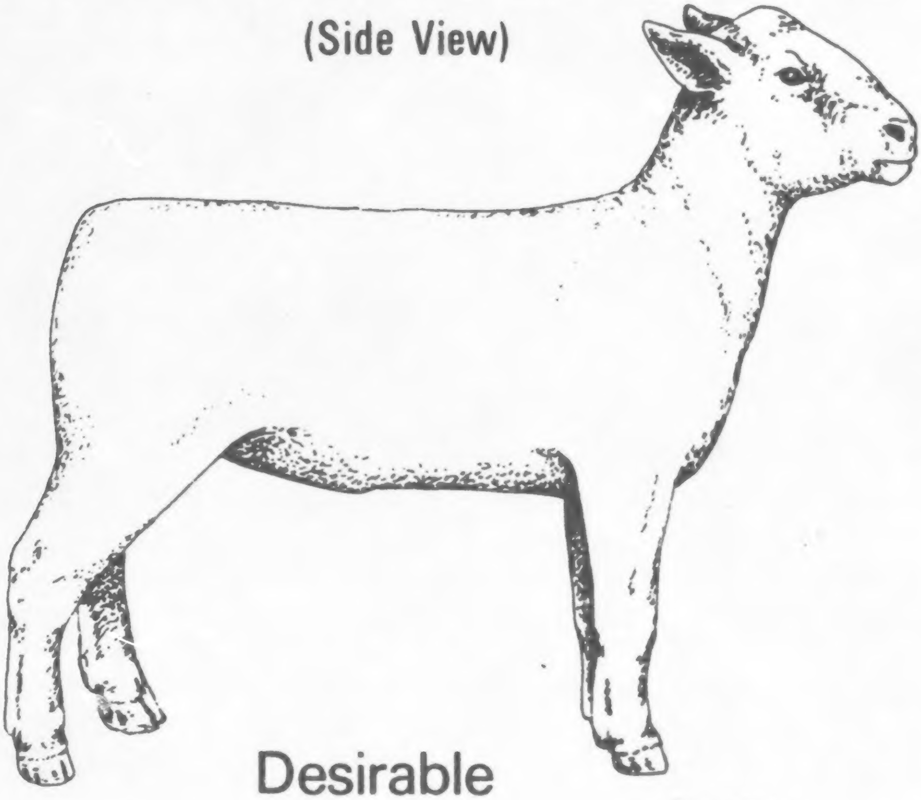
B-241-B

Parts of A Sheep

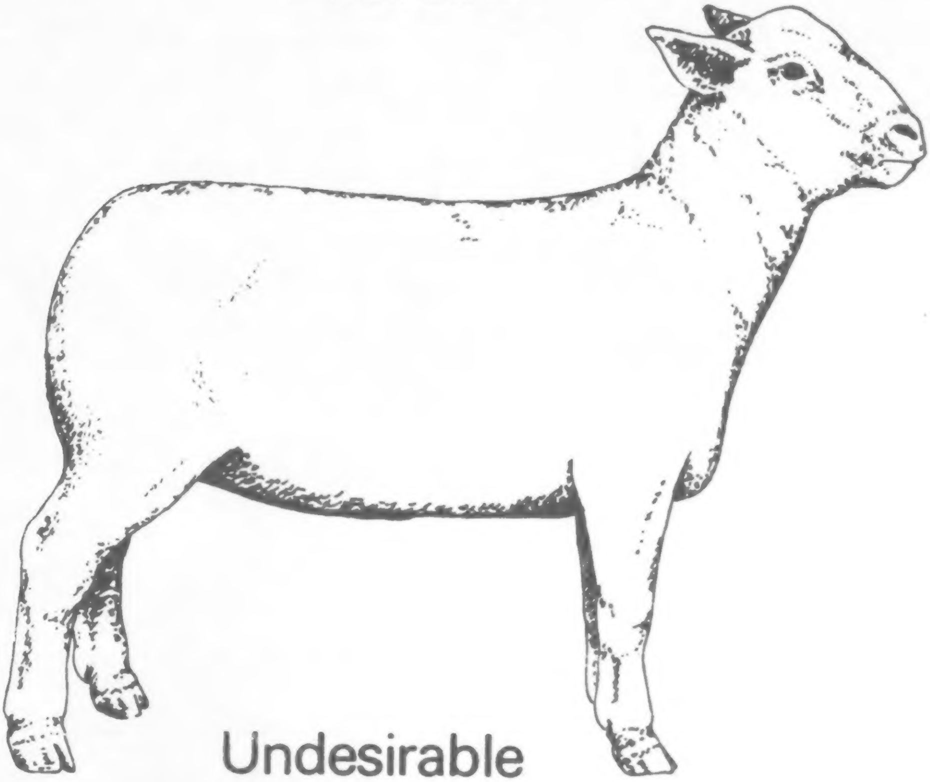

Poll
Forehead
Top of Shoulder
Face
Rump
Loin
Back
or Rack
Neck
Nose
Hip
Ribs
Dock
Mouth
Body
Shoulder
Leg of Lamb
Breast
Stifle
Elbow
Fore Shank
Rear Flank
Belly
Hock
Last Rib
Knee
Fetlock
Cannon Bone
Fore Flank
Pastern
Hoof
Coffin

Desirable and Undesirable Lambs

(Side View)

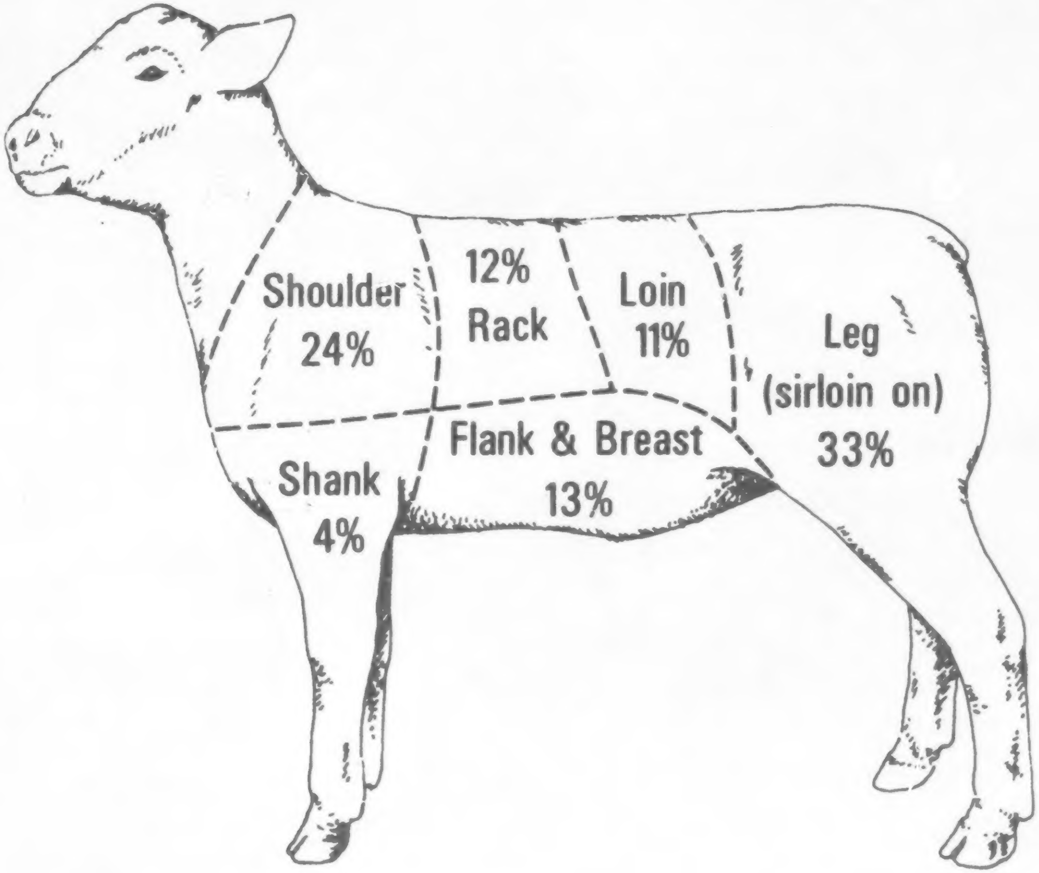


Desirable



Undesirable

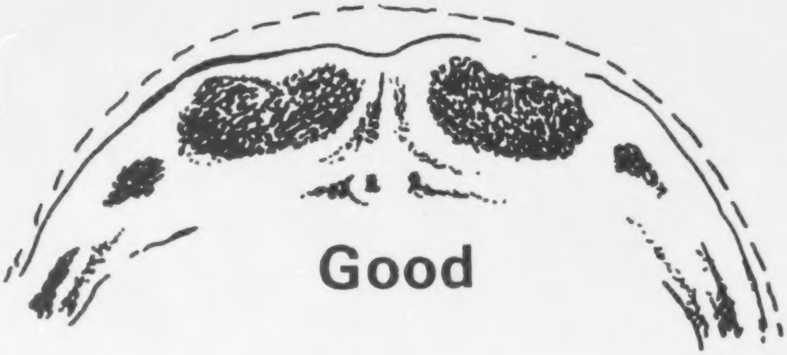
Approximate Yield Percentage of a Lamb Carcass

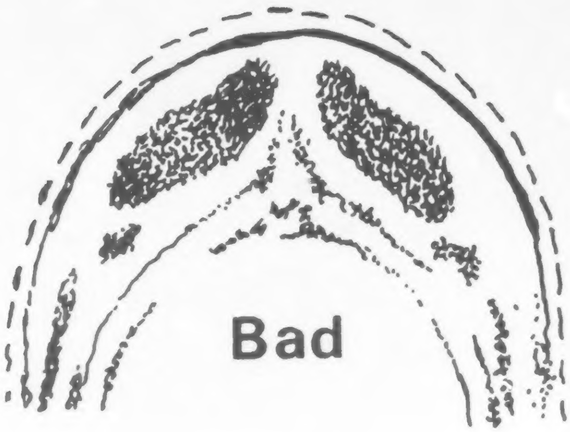

Shoulder 24%
12% Rack
Loin 11%
Leg (sirloin on) 33%
Flank & Breast 13%
Shank 4%

TM 16

B-247-B

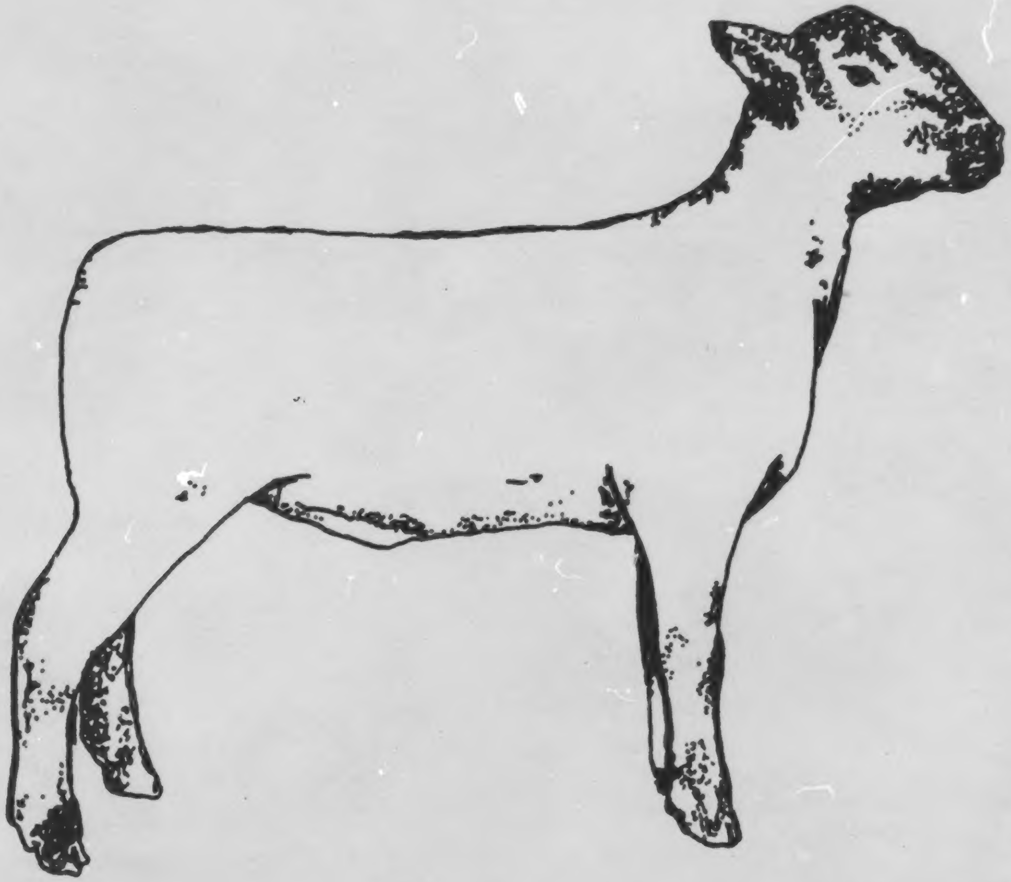
Shape of Top and Muscling of Lambs





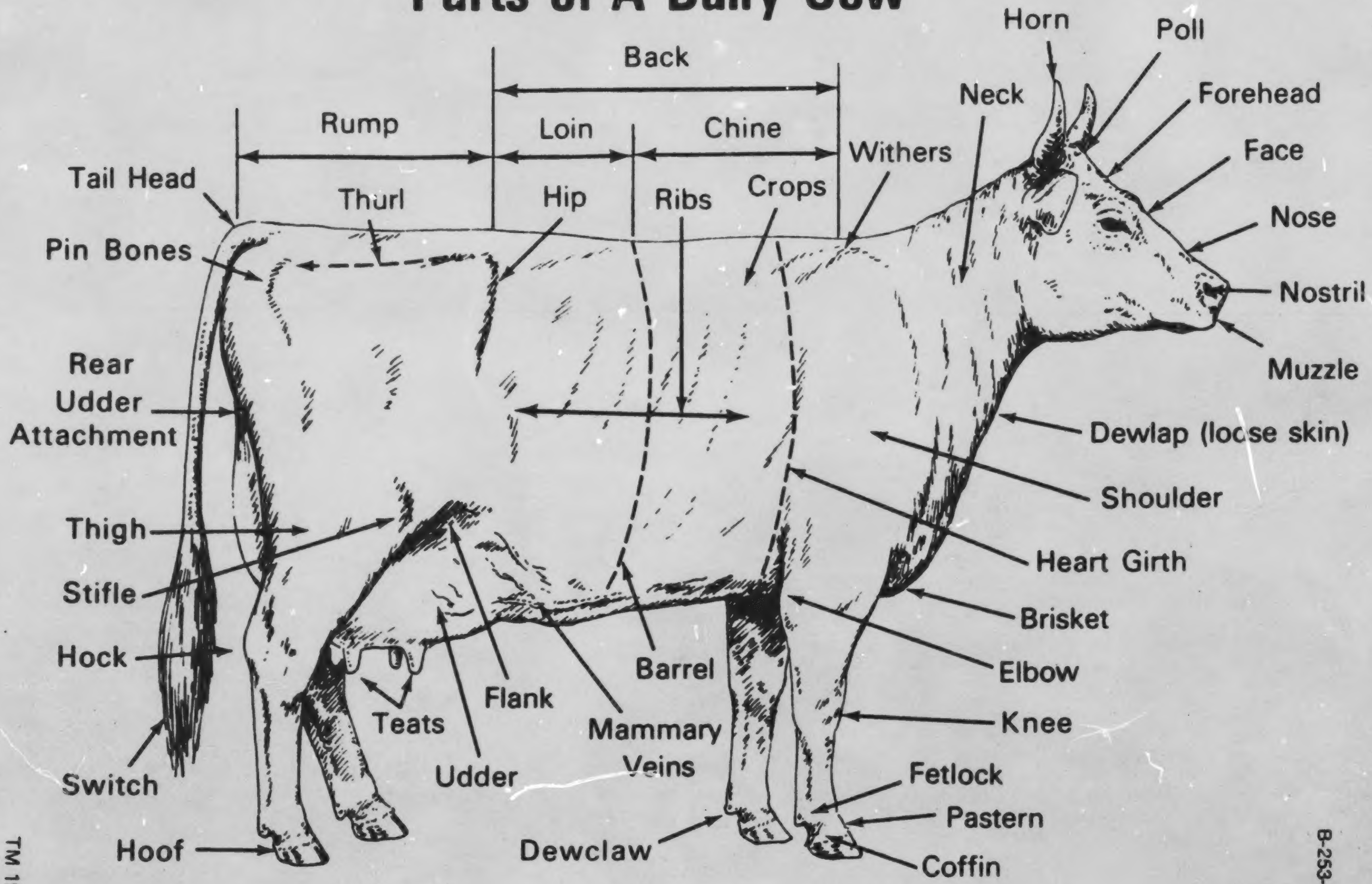
Source: Omaha Curriculum Guide

Outline of a Lamb



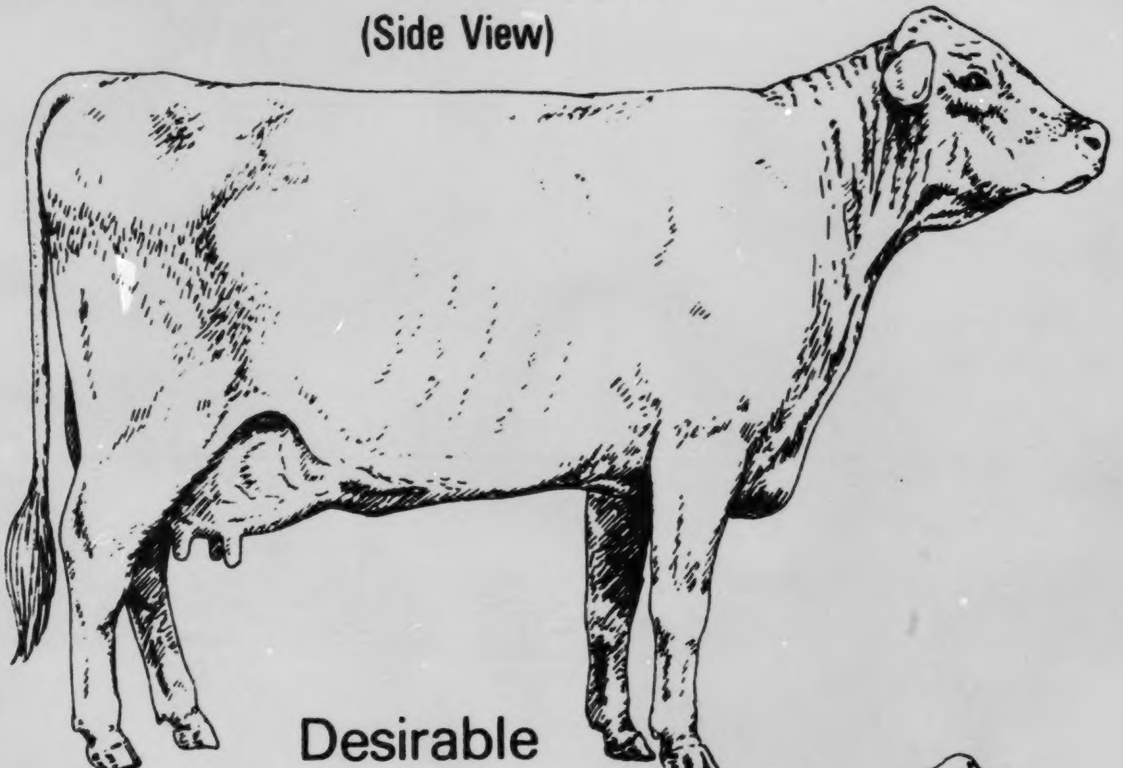
Source: Omaha Curriculum Guide

Parts of A Dairy Cow

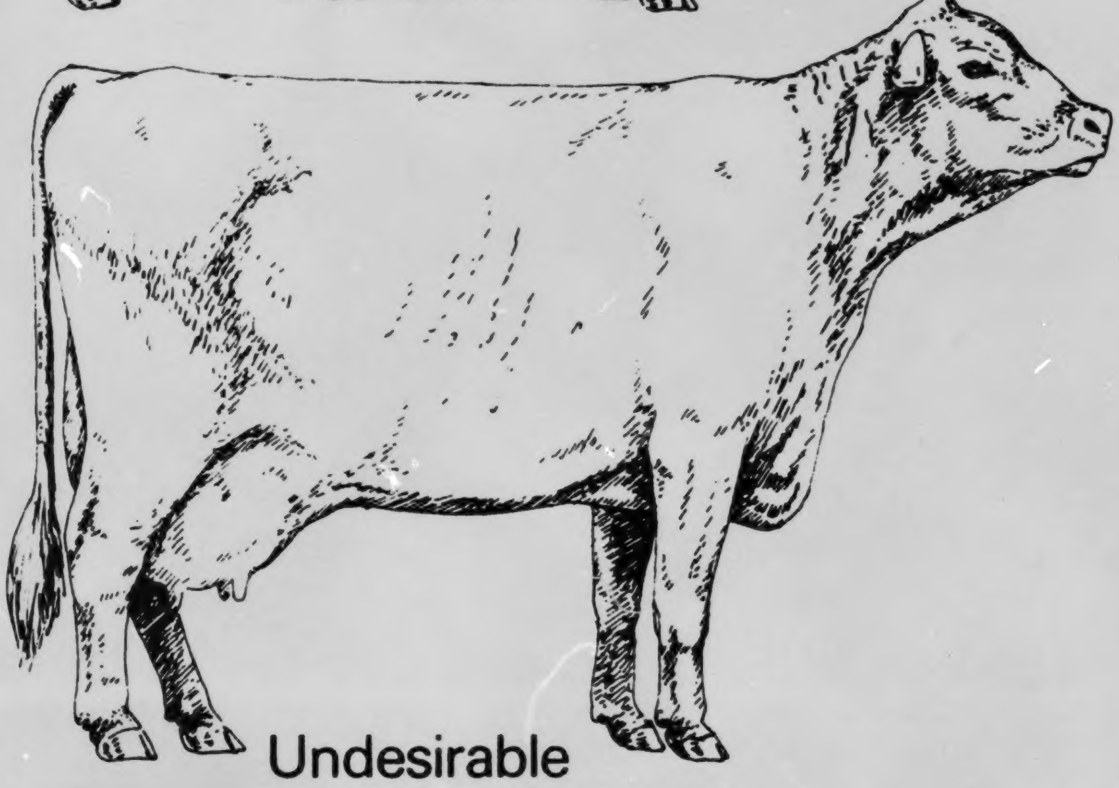

Back
Rump
Loin
Chine
Tail Head
Thurl
Hip
Ribs
Crops
Withers
Neck
Horn
Poll
Forehead
Face
Nose
Nostril
Muzzle
Pin Bones
Rear Udder Attachment
Dewlap (loose skin)
Shoulder
Heart Girth
Thigh
Stifle
Brisket
Hock
Elbow
Barrel
Flank
Teats
Mammary Veins
Knee
Switch
Udder
Fetlock
Pastern
Hoof
Dewclaw
Coffin

Desirable and Undesirable Dairy Cows

(Side View)



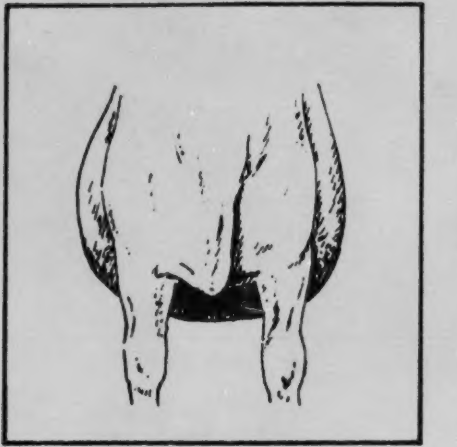
Desirable



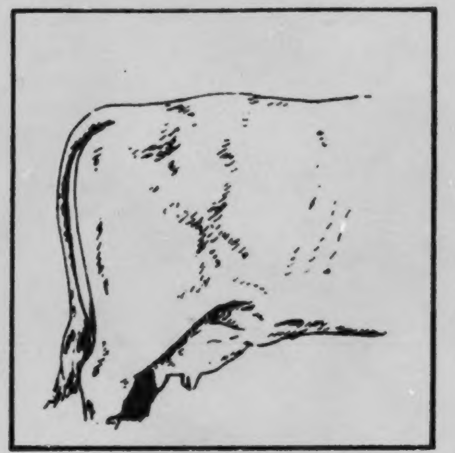
Undesirable

Desirable and Undesirable Dairy Cows

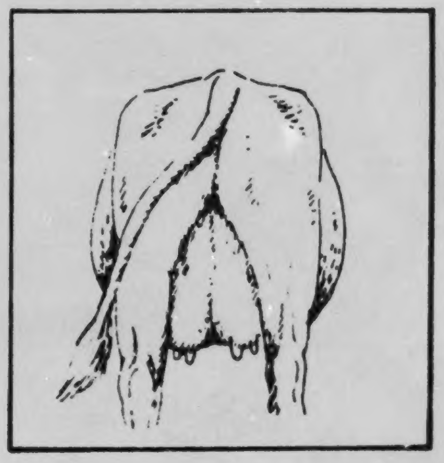
(Body Capacity and Udder and Rear Attachment)



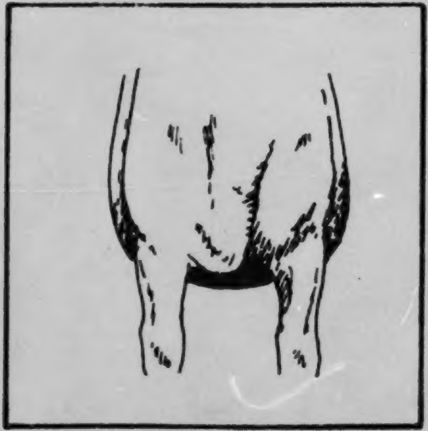
Good



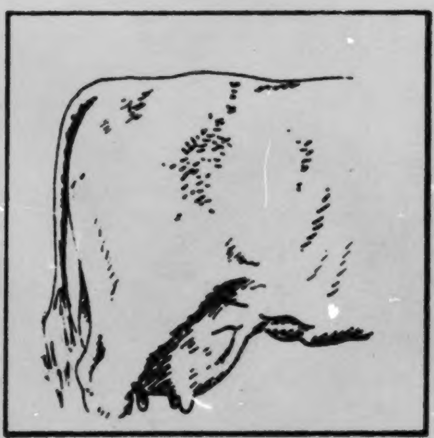
Good



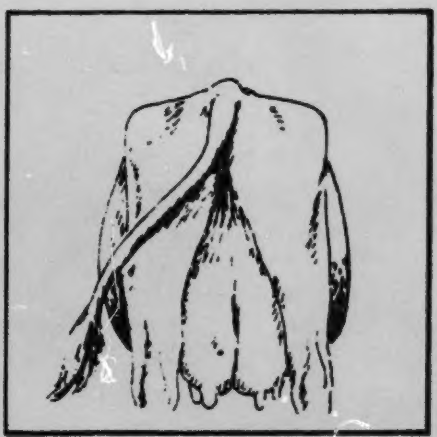
Good



Poor

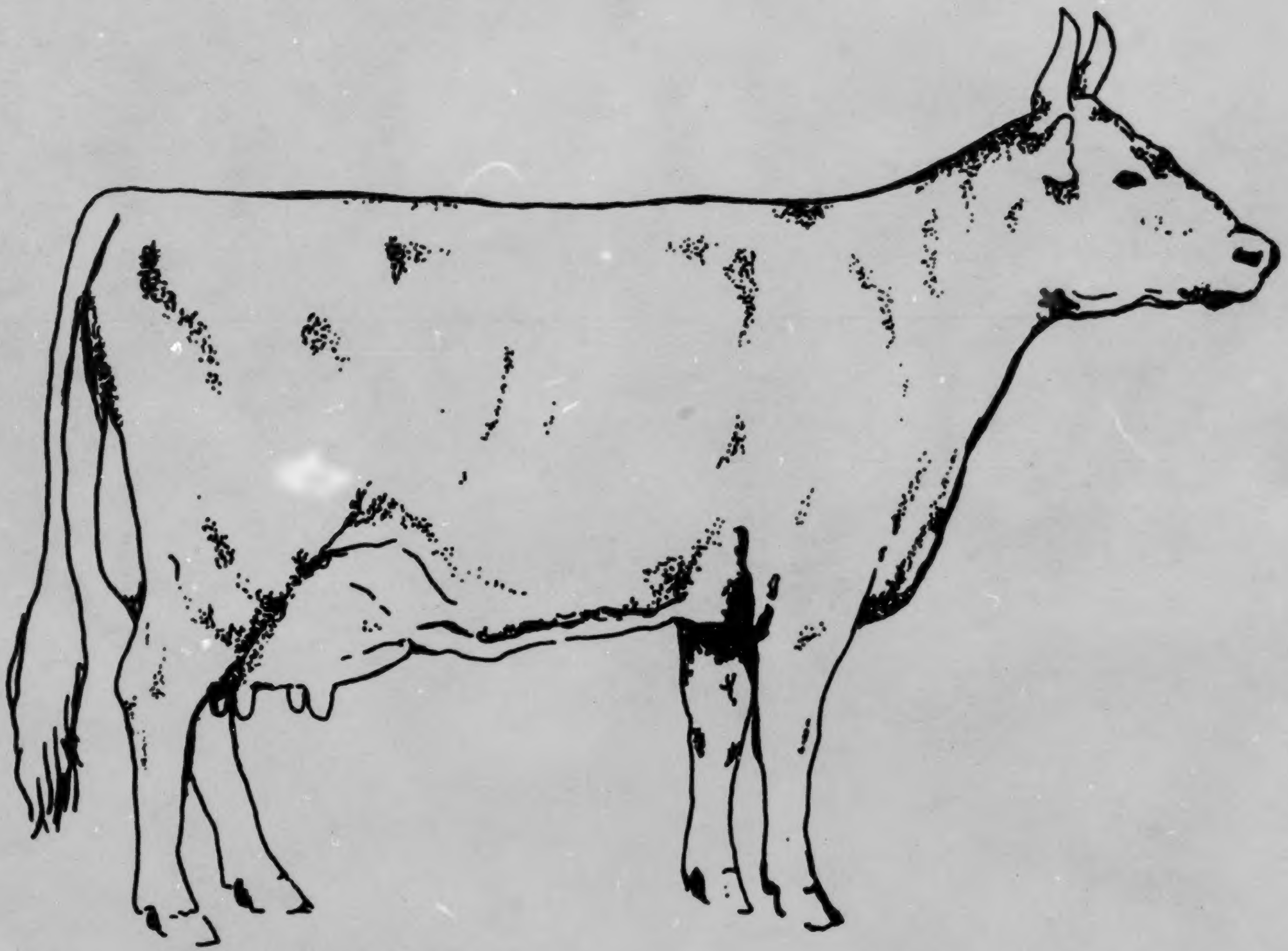


Poor



Poor

Outline of a Dairy Cow



Source: Omaha Curriculum Guide

TM 22

B-259-B

LIVESTOCK SELECTION
UNIT VIII

TEST

1. Match the terms on the right with the correct definition.

___ a. Overall smoothness, blending of shoulders, and refinement of head and bone

___ b. Evidence of vigor or "doing ability" denoted by depth and fullness of heart, spring of ribs, width of chest floor, and substance of bone

___ c. Combination of characteristics which indicate the female will be a good mother

___ d. Traits distinguishing a male from a female

___ e. Equine animal taller than 58"

___ f. General term commonly defined as a combination of characteristics which make an animal most useful for a specific purpose

___ g. Freedom of excess finish or fat

___ h. Equine animal less than 4'10"

___ i. Condition of having size and weight for age

___ j. Traits which denote one breed from another

___ k. Proper proportions and blending of parts

___ l. Ability of an animal to "hold itself together" as indicated by strength of top, tightness of shoulders, and squareness of feet and by leg placement

1. Type
2. Balance of symmetry
3. Meatiness or muscling
4. Quality
5. Trimness
6. Tight-framed
7. Soundness
8. Constitution
9. Growthiness
10. Scale
11. Ruggedness
12. Broodiness
13. Breed character
14. Femininity
15. Masculinity
16. Horse
17. Pony
18. Hand

_____ m. Size of the animal as determined by skeletal structure

_____ n. Unit of measure on horse size

_____ o. Traits distinguishing a female from a male

_____ p. High proportion of volume in the areas of the high priced cut

_____ q. Quality of being correct on the feet and legs as opposed to unsound

_____ r. Quality of having large bones and frame

2. List three steps in the livestock selection process.

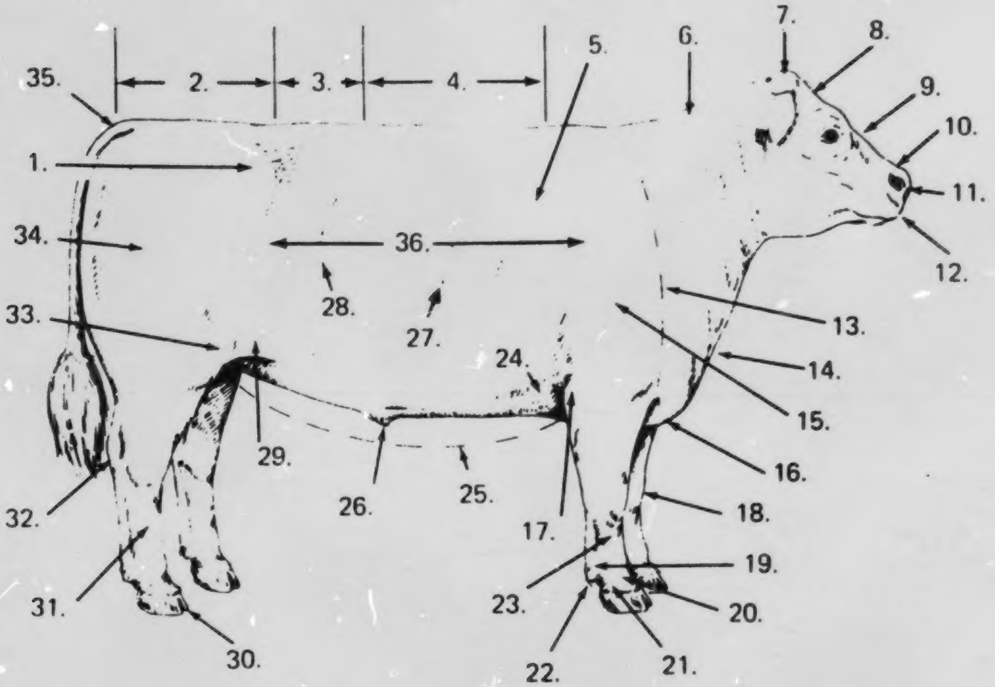
   a.

   b.

   c.

3. Identify the parts of a beef, swine, sheep, dairy animal, and horse

a. Beef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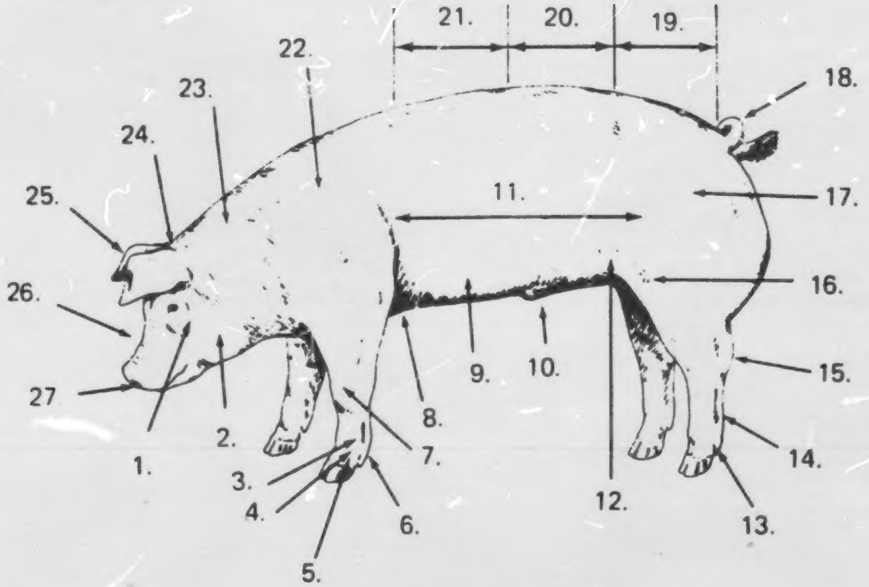
b. Swine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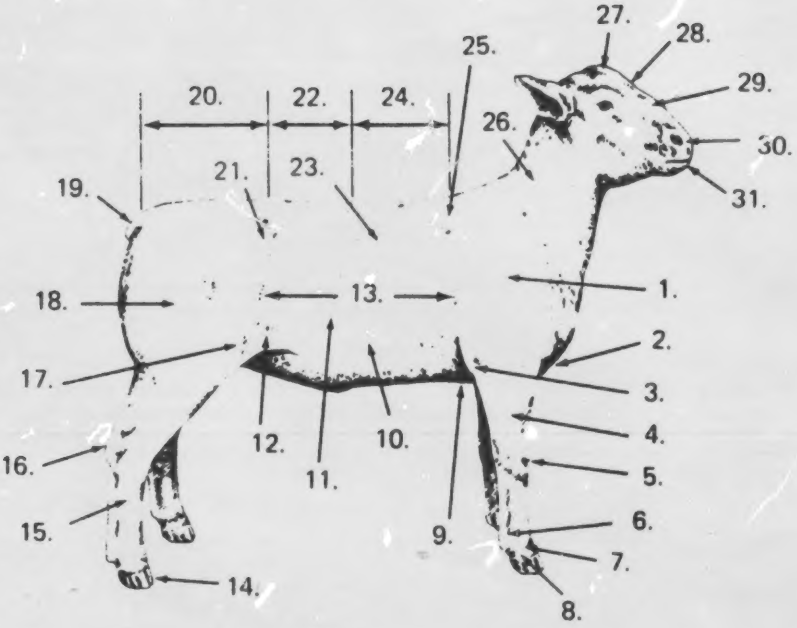
c. Sheep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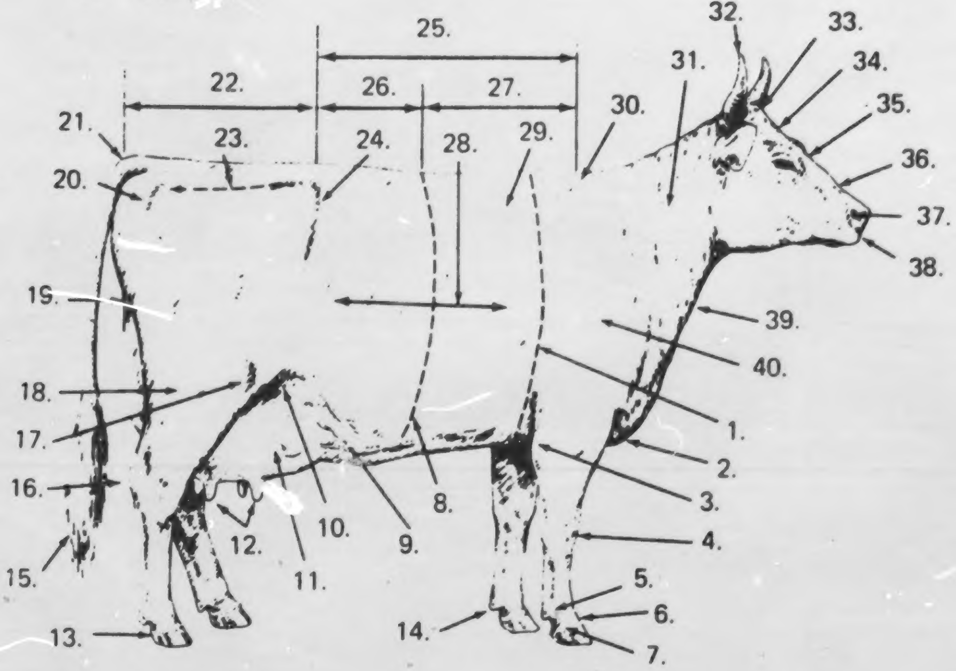
d. Dairy cow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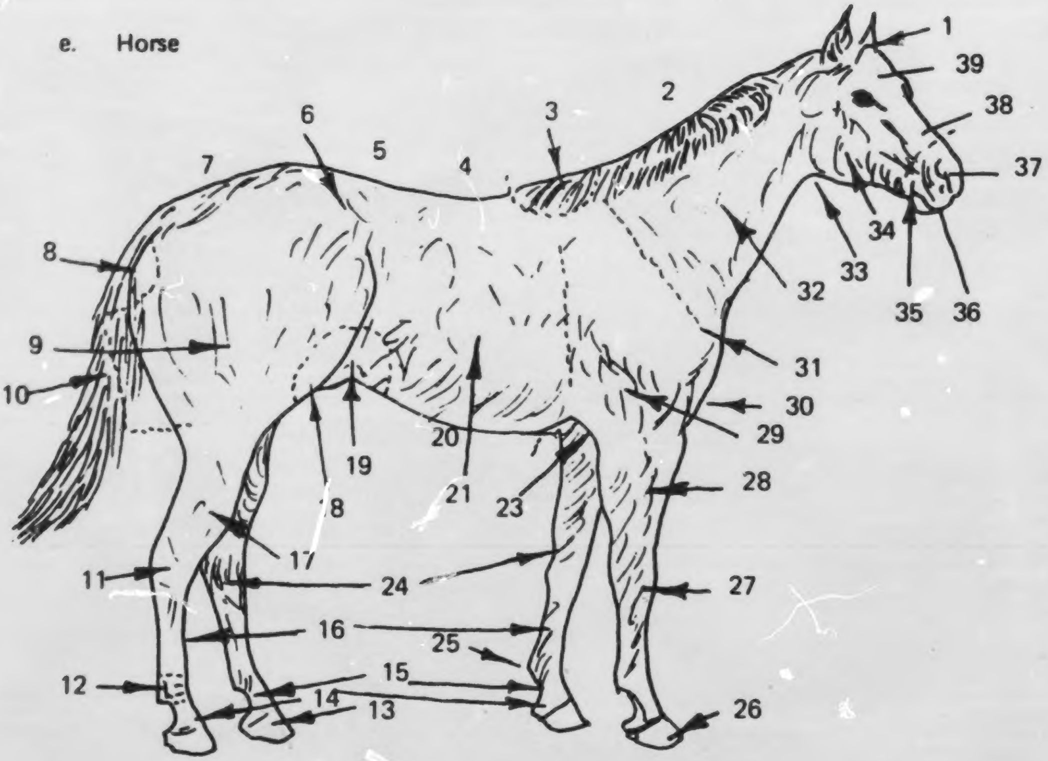
e. Horse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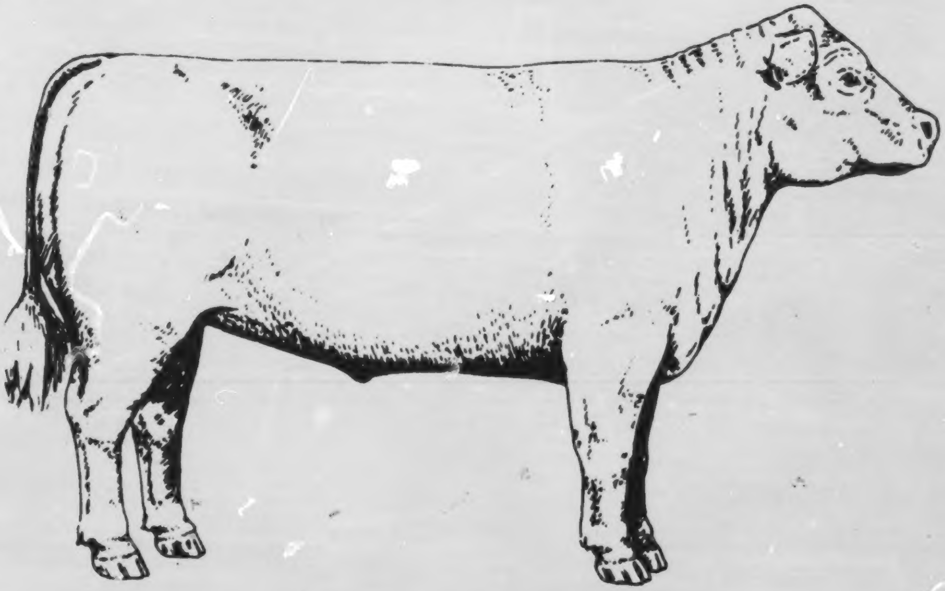
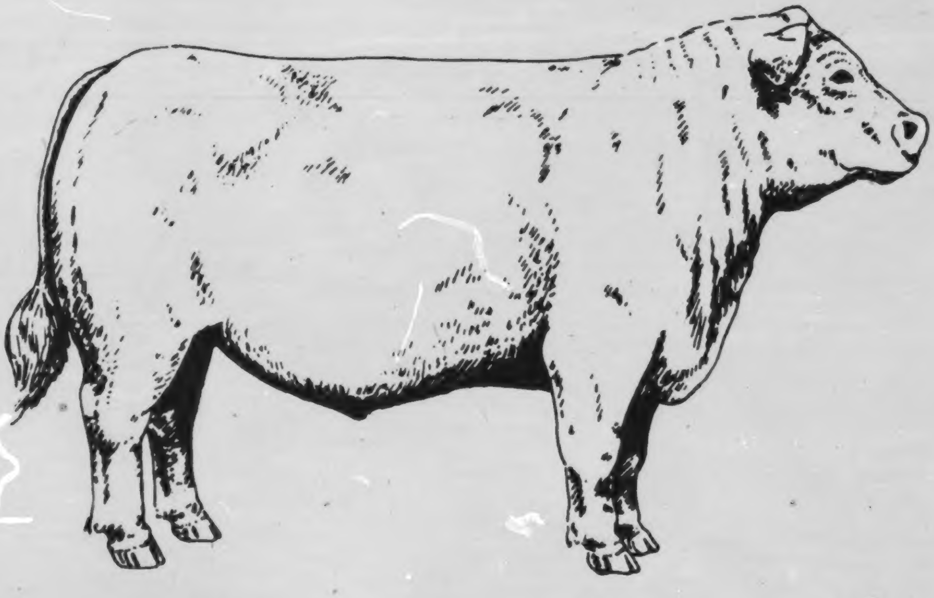
39. ______________

4. Identify the following animals as being desirable and undesirable by writing the words under the appropriate picture.

a. Beef

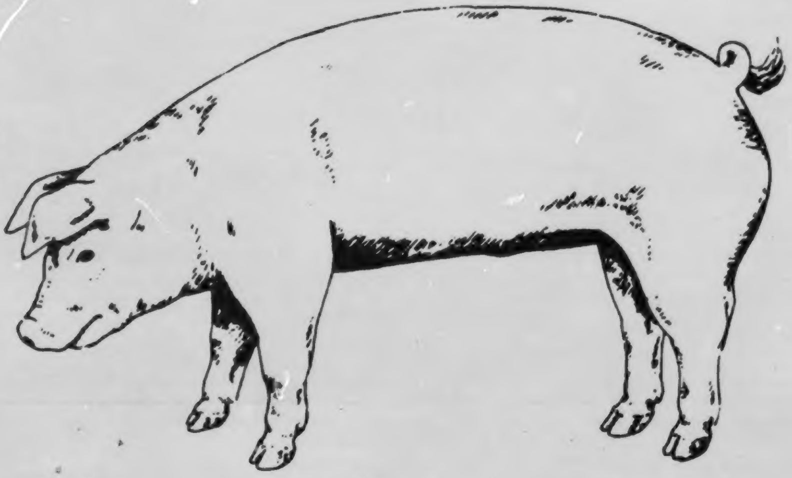


1. ____________________

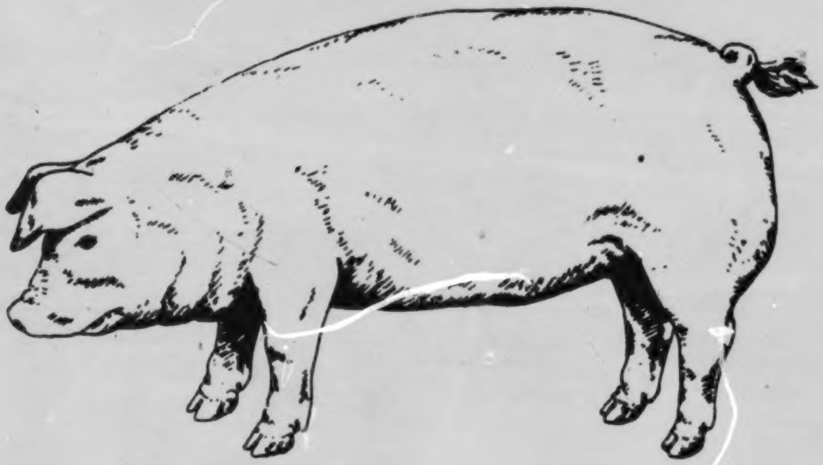


2. ____________________

b. Swine

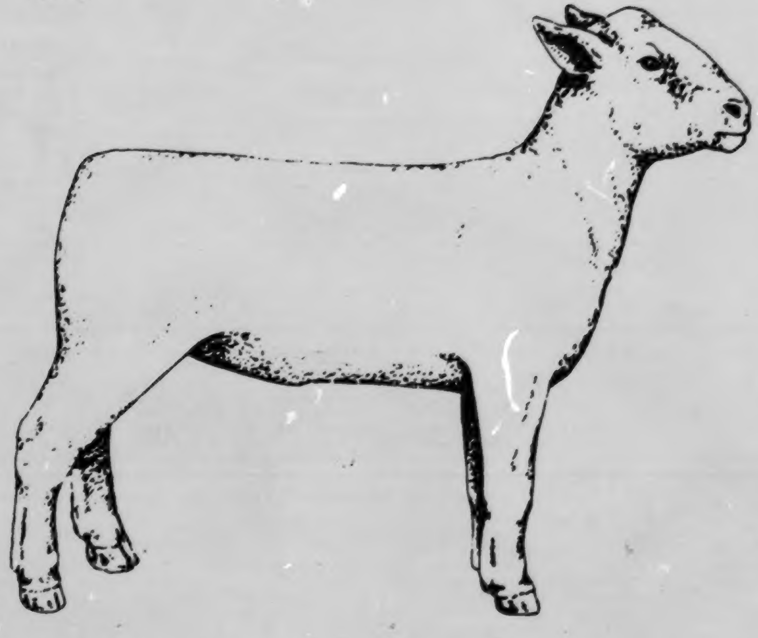


1.__________________________



2. __________________________

c. Sheep



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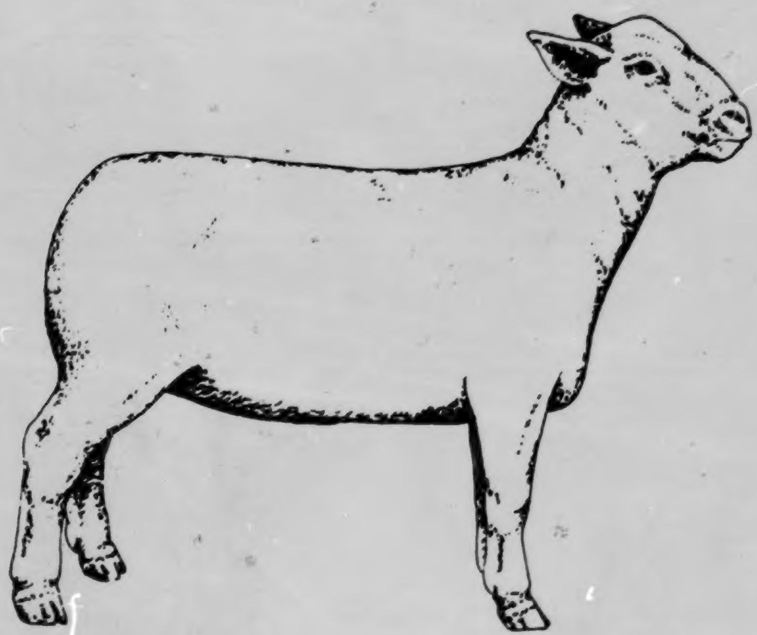
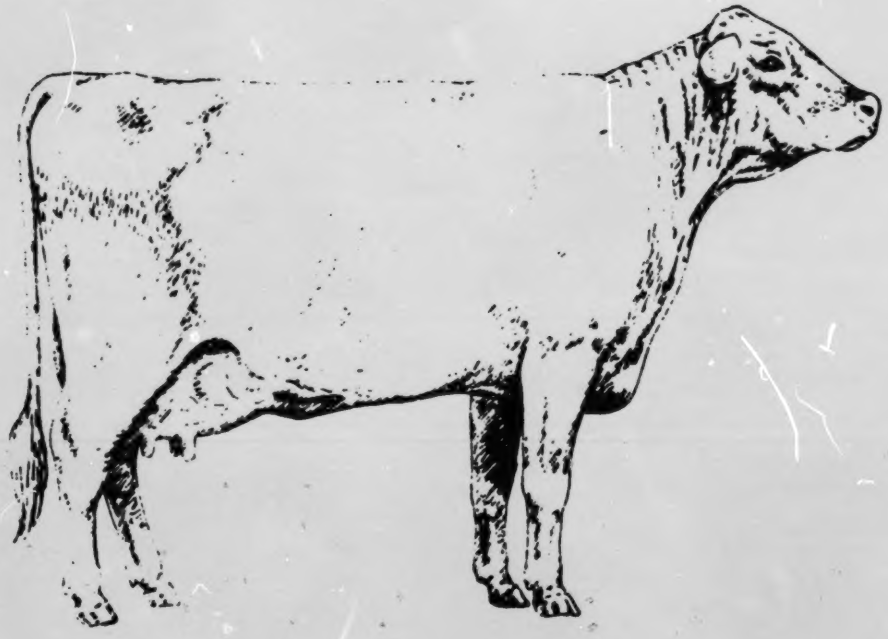
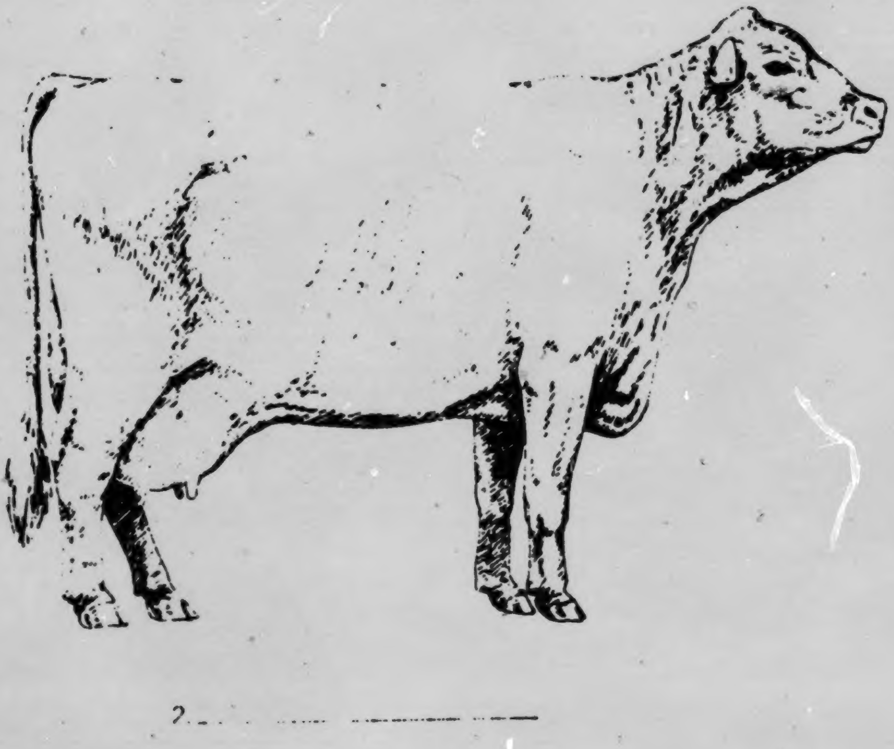


2. ______________________

d. Dairy cow

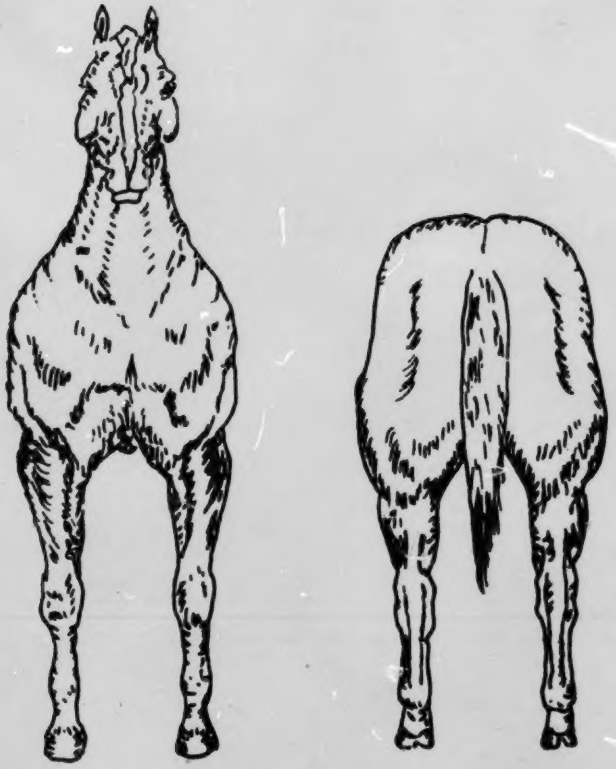


1. ______________________

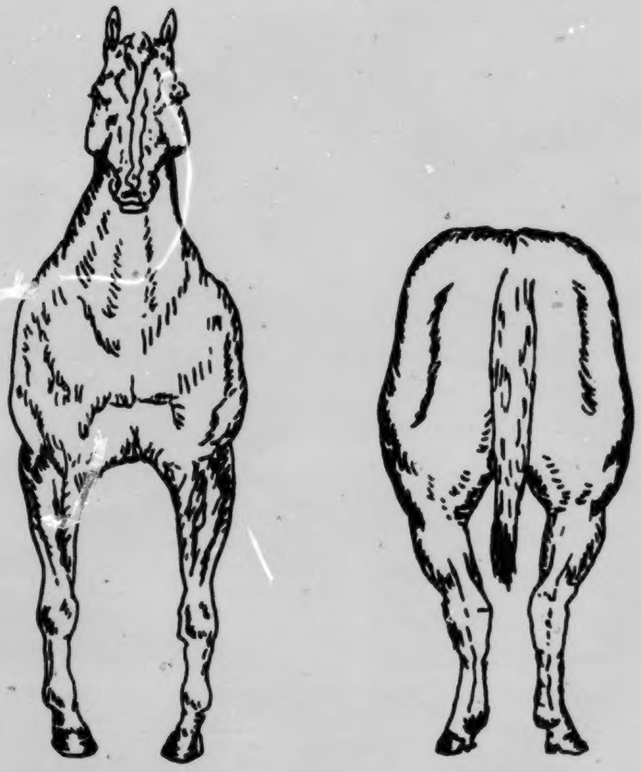


2. ______________________

e. Horses



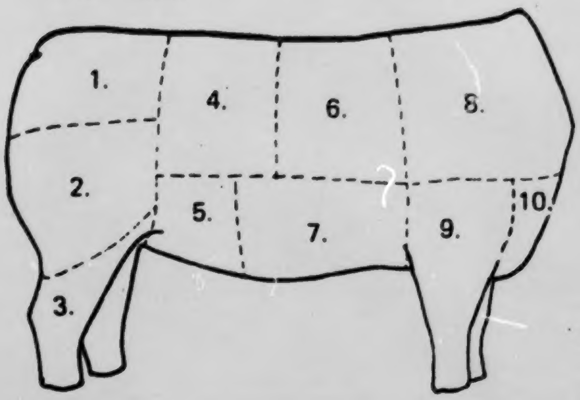
1. ______________________________



2. ______________________________

5. Identify the wholesale cuts of these animals.

a. Beef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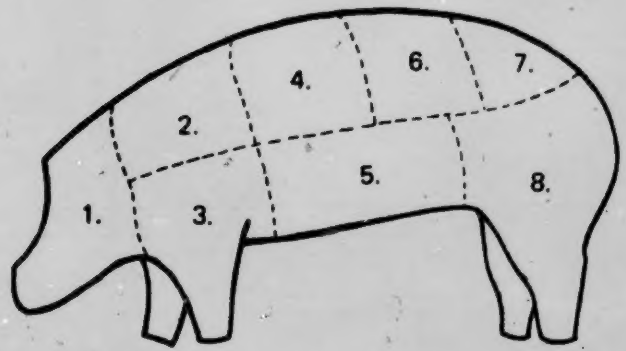
b. Swine



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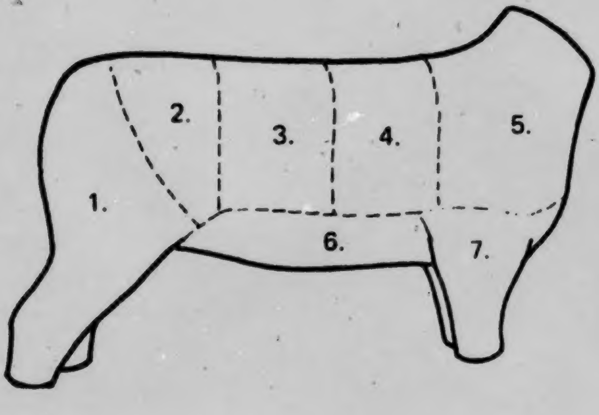
c. Sheep



1. ____________________
2. ____________________
3. ____________________
4. ____________________
5. ____________________
6. ____________________
7. ____________________

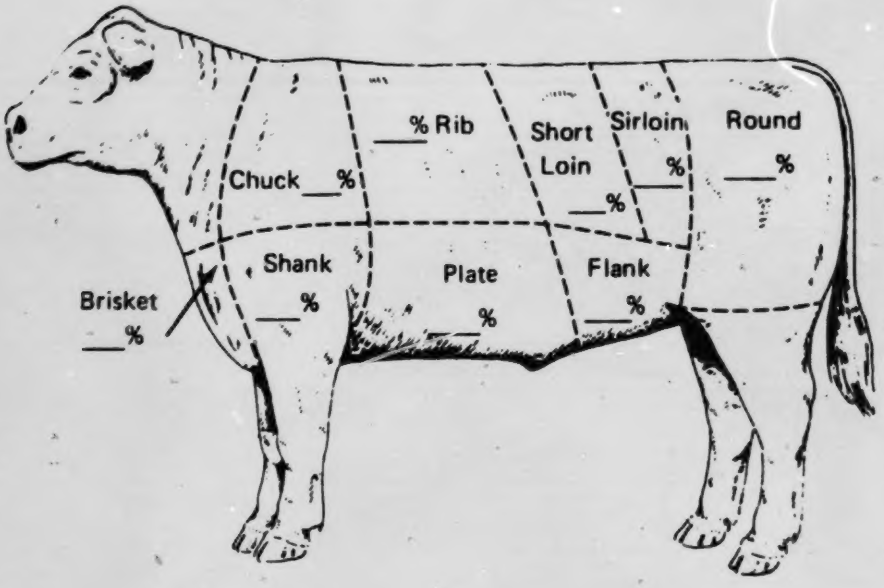
6. Match the approximate percentage of yield to the name of the wholesale cut by writing it in the blank on the picture below.

a. Beef

23% 5% 4%

9% 26% 5%

8% 9% 8%


Chuck ___%
___% Rib
Short Loin ___%
Sirloin ___%
Round ___%
Brisket ___%
Shank ___%
Plate ___%
Flank ___%

b. **Sheep**

16%

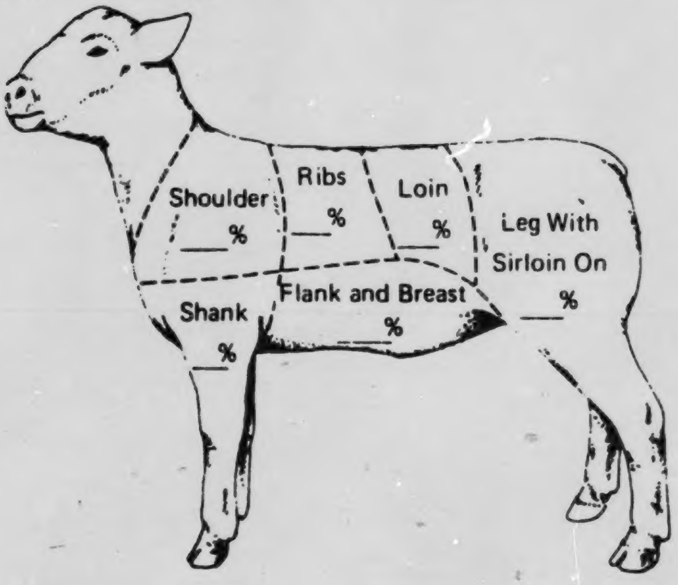
4%

12%

24%

33%

11%


Shoulder
___%
Ribs
___%
Loin
___%
Leg With
Sirloin On
___%
Shank
___%
Flank and Breast
___%

c. **Swine**

21%

17.5%

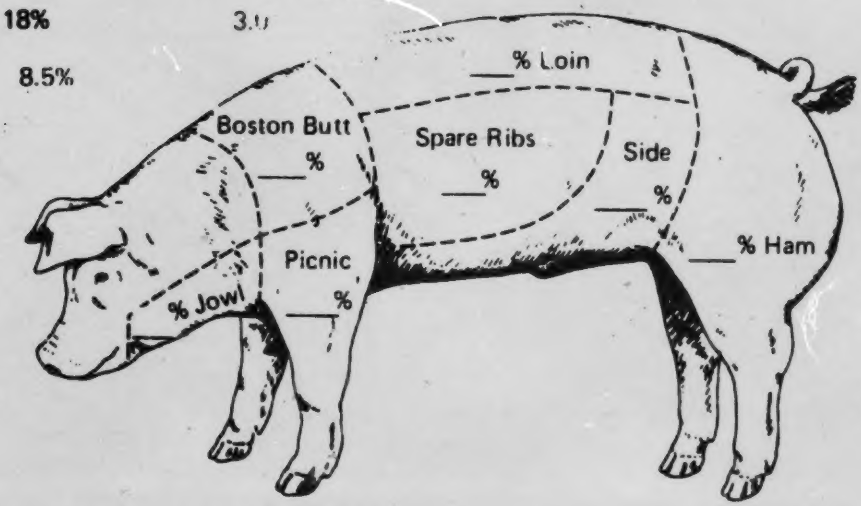
18%

8.5%

6.5%

4.5%

3.0


___% Loin
Boston Butt
___%
Spare Ribs
___%
Side
___%
___% Ham
Picnic
___%
% Jowl

7. Write ten comparative advantages and ten criticism terms as used in selection of livestock.

Comparative Advantage Terms

1)

2)

3)

4)

5)

6)

7)

8)

9)

10)

Criticisms

1)

2)

3)

4)

5)

6)

7)

8)

9)

10)

8. Write a sample set of reasons on a class of ________________. (class and placing to be completed by instructor)

LIVESTOCK SELECTION
UNIT VIII

ANSWERS TO TEST

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   b. 8
   c. 12
   d. 15
   e. 16
   f. 1
   g. 5
   h. 17
   i. 9
   j. 13
   k. 2
   l. 6
   m. 2
   n. 18
   o. 14
   p. 3
   q. 7
   r. 11

2. a. Know the parts of the live animal
   b. Know the wholesale cuts of the animal
   c. Know what the ideal animal looks like

3. a. Beef
   1) Hooks
   2) Rump
   3) Loin
   4) Back
   5) Crops
   6) Neck
   7) Poll
   8) Forehead
   9) Face
   10) Nose
   11) Nostril
   12) Muzzle
   13) Shoulder vein
   14) Dewlap
   15) Shoulder
   16) Brisket
   17) Elbow
   18) Knee
   19) Fetlock
   20) Pastern
   21) Coffin
   22) Dewclaw
   23) Shank
   24) Fore flank
   25) Underline
   26) Sheath
   27) Ribs
   28) Last rib (13th)
   29) Flank
   30) Hoof
   31) Shank (cannon bone)
   32) Hock
   33) Stifle
   34) Quarter
   35) Tail head
   36) Body

b. Swine

1) Cheek
2) Jowl
3) Fetlock
4) Pastern
5) Coffin
6) Foreleg
7) Knee
8) Fore flank
9) Belly
10) Sheath
11) Side
12) Hind flank
13) Dewclaw
14) Hindleg
15) Hock
16) Stifle
17) Ham
18) Tail
19) Rump (hip)
20) Loin
21) Back
22) Shoulder
23) Neck
24) Poll
25) Ear
26) Snout
27) Nostril

c. Sheep

1) Shoulder
2) Breast
3) Elbow
4) Fore shank
5) Knee
6) Fetlock
7) Pastern
8) Coffin
9) Fore flank
10) Belly
11) Last rib
12) Rear flank
13) Body
14) Hoof
15) Cannon bone
16) Hock
17) Stifle
18) Leg of lamb
19) Dock
20) Rump
21) Hip
22) Loin
23) Ribs
24) Back or rack
25) Top of shoulder
26) Neck
27) Poll
28) Forehead
29) Face
30) Nose
31) Mouth

d. Dairy cow

1) Heart girth
2) Brisket
3) Elbow
4) Knee
5) Fetlock
6) Pastern
7) Coffin
8) Barrel
9) Mammary veins
10) Flank
11) Udder
12) Teats
13) Hoof
14) Dewclaw
15) Switch
16) Hock
17) Stifle
18) Thigh
19) Rear udder attachment
20) Pin bones
21) Tail head
22) Rump
23) Thurl
24) Hip
25) Back
26) Loin
27) Chine
28) Ribs
29) Crops
30) Withers
31) Neck
32) Horn
33) Poll
34) Forehead
35) Face
36) Nose
37) Nostril
38) Muzzle
39) Dewlap
40) Shoulder

e. Horses

1) Foretop (poll)
2) Mane (crest)
3) Withers
4) Back
5) Loin
6) Hip
7) Croup (rump)
8) Buttock
9) Thigh
10) Quarter
11) Hock
12) Fetlock (ankle)
13) Hoof
14) Coronet
15) Pastern
16) Cannon
17) Gaskin
18) Stifle
19) Rear flank
20) Underline
21) Barrel
22) Heart girth
23) Elbow
24) Chestnuts
25) Ergot
26) Quarter of hoof
27) Knee
28) Forearm
29) Arm
30) Chest
31) Shoulder
32) Neck
33) Throatlatch
34) Jaw
35) Muzzle
36) Lips (mouth)
37) Nostril
38) Nose
39) Forehead

4. a. Beef
    1) Desirable
    2) Undesirable
  b. Swine
    1) Desirable
    2) Undesirable
  c. Sheep
    1) Desirable
    2) Undesirable
  d. Dairy cow
    1) Desirable
    2) Undesirable
  e. Horses
    1) Desirable
    2) Undesirable

5. a. Beef

1) Rump
2) Round
3) Shank
4) Loin
5) Flank
6) Rib
7) Plate
8) Chuck
9) Fore shank
10) Brisket

b. Swine

1) Jowl
2) Boston butt
3) Picnic
4) Back
5) Side
6) Loin
7) Rump
8) Ham

c. Sheep

1) Leg
2) Sirloin
3) Loin
4) Rack
5) Shoulder
6) Breast

6. a. Beef

Brisket--5%
Chuck--26%
Rib--9%
Short loin--8%
Sirloin--9%
Round--23%
Flank--5%
Plate--8%
Shank--4%

b. Sheep

Shank--4%
Breast and flank--13%
Leg (Sirloin on)--33%
Loin--11%
Rack--12%
Shoulder--24%

c. Swine

Jowl--4.5%

Picnic--8.5%

Spareribs--3%

Side--17.5%

Ham--21%

Loin--18%

Boston butt--6.5%

7. Any ten comparative advantages and criticism terms listed under No. 7 on information sheet for either beef, swine, or sheep.

8. Evaluated to the satisfaction of the instructor.

COMPOSITION AND CLASSIFICATION OF FEEDS
UNIT IX

UNIT OBJECTIVE

After completion of this unit, the student should be able to complete a chart showing the composition of a feed, determine value of a feed, classify feeds into concentration and roughage, and compute rations by the Pearson's square and trial and error methods. This knowledge will be evidenced by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with composition and classification of feeds to the correct definitions.
2. Complete a chart showing composition of feed.
3. List three methods used to determine value of a feed.
4. Classify feeds into the proper category.
5. Select from a list three requirements that every commercial feed company must state on its feed tag.
6. Classify sugars as compound or simple.
7. Describe the procedure for determining water and dry matter content of a feed.
8. Match percent of protein required in a ration with size of various livestock.
9. Compare the composition of feeds as to digestible protein and total digestible nutrients.
10. Determine the total percentage of digestible protein and total digestible nutrients of feeds.
11. Balance a ration using the Pearson's square method.
12. Balance a ration for digestible protein, dry matter, and total digestible nutrients using the trial and error method.
13. Determine protein requirements for various animals.

COMPOSITION AND CLASSIFICATION OF FEEDS
UNIT IX

SUGGESTED ACTIVITIES

I. Instructor:

  A. Provide student with objective sheet.

  B. Provide student with information and assignment sheets.

  C. Make transparencies.

  D. Discuss unit and specific objectives.

  E. Discuss information sheet and procedures for completing the assignment sheets.

  F. Provide the students with a copy of a commercial feed tag.

  G. Take students on a field trip to a food company to see how feeds are mixed and rations are determined, if possible.

  H. Give test.

II. Student:

  A. Read objectives.

  B. Study information sheet.

  C. Complete assignment sheets.

  D. Attempt to figure a ration for animals included in supervised training program.

  E. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

  A. Objectives

  B. Information sheet

C. Transparency masters

   1. TM 1--Feed Composition

   2. TM 2--Classification of Concentrates

   3. TM 3--Classification of Roughages

   4. TM 4--Commercial Feed Tag

D. Assignment sheets

   1. Assignment Sheet #1--Determining TDN and Digestible Protein Content of Basic Feeds

   2. Assignment Sheet #2--Balancing Rations Using Pearson's Square

   3. Assignment Sheet #3--Working a Sample Ration for Fattening a Beef Animal

   4. Assignment Sheet #4--Working a Sample Ration for Fattening Swine

   5. Assignment Sheet #5--Determine Protein Requirements for Various Animals

E. Answers to assignment sheets

F. Test

G. Answers to test

II. References:

A. *General Facts on Livestock Feeding*. Urbana, Illinois: University of Illinois.

B. Morrison, Frank B. *Feeds and Feeding, Abridged*, 9th ed. Claremont, Ontario, Canada: Morrison Publishing Company, 1961.

C. Cassard, Daniel W., and Elwood M. Juergenson. *Approved Practices in Feeds and Feeding*. Danville, Illinois: The Interstate Printers and Publishers, Inc.

D. *Swine Feeds and Feeding*. Urbana, Illinois: University of Illinois.

E. *Feeding Dairy Cattle*. Farmers Bulletin No. 2153. United States Department of Agriculture.

F. Henderson, H. O., and Paul M. Reaves. *Dairy Cattle Feeding and Management*. New York: John Wiley and Sons, Inc.

COMPOSITION AND CLASSIFICATION OF FEEDS
UNIT IX

INFORMATION SHEET

I. Terms and definitions

A. Fiber--Tough part of a feed; not very digestible

B. Roughage--Feed that is high in fiber or nondigestible material and low in total digestible nutrients

C. Concentrate--Feed that is high in total digestible nutrients and low in fiber

D. Silage--Feed from crops cured and stored green or without drying

E. Ration--Feed allowed for a given animal during a day of twenty-four hours

(NOTE: The feed may be fed all at once or at intervals throughout the day.)

F. Balanced ration--Ration which furnishes the several nutrients in such proportion and amount as will properly nourish a given animal for twenty-four hours

G. Supplement--Protein or vitamin added to a feed

H. Crude protein--Total amount of protein contained in a feed

I. Digestible protein--Portion of crude protein which may be digested by the animal

J. Total digestible nutrients (TDN)--That portion of a feed which is digested and used in the animal's body

K. Pasturage--Plant growth available to animals on the range or in the pasture

L. Protein--Organic compound consisting of carbon, hydrogen, oxygen, nitrogen, and sulfur

M. Fat--Organic compound composed of carbon, hydrogen, and oxygen

N. Dry matter (DM)--Average percentage of dry material in a feed found by weighing the feed, drying by heat, and reweighing

INFORMATION SHEET

II. Composition of feed (Transparency 1)

  A. Water

  B. Dry matter

    1. Ash (minerals)

    2. Organic matter

      a. Protein

      b. Carbohydrates

        1) Crude fiber (cellulose)

        2) Nitrogen-free extract

          a) Simple sugar

          b) Starch

          c) Compound sugar

      c. Vitamins

      d. Fats

III. Methods used to determine value of feed

  A. Cost per pound of TDN

  B. Cost per pound of protein

  C. Cost per pound of feed

IV. Classification of feeds

  A. Concentrates (Transparency 2)

    1. Grains

    Examples: Corn, wheat, oats, milo, barley

    2. Grain by-products

    Examples: Wheat bran, wheat standard middlings

    3. Molasses

    Examples: Cane, beet

INFORMATION SHEET

4. Oil meals

   Examples: Soybean, cottonseed, linseed, peanut

5. Animal products

   Examples: Meat scraps, tankage, fish meal, dried dairy products

B. Roughages (Transparency 3)

1. Dry

   a. Hays

      Examples: Grass, legume, alfalfa

   b. Hulls

      Examples: Cottonseed, peanut, rice

   c. Straws

      Examples: Wheat, oats, barley

2. Green

   a. Roots

   b. Grasses

   c. Tubers

3. Silage

   Examples: Corn forage, sorghum forage, grass

V. Commercial feed tag requirements (Transparency 4)

A. Minimum of crude protein

B. Minimum of crude fat

C. Maximum of crude fiber

(NOTE: Laws govern the sale of commercial feeds and mineral mixtures to protect the purchaser. The ingredients of a mixture must be labeled with contents, but the percentage of each is not required.)

VI. Classification of sugars

A. Simple

1. Glucose

2. Fructose

3. Galactose

INFORMATION SHEET

B. Compound

1. Maltose
2. Sucrose
3. Lactose

VII. Procedure for determining water and dry matter content of feed

A. Weigh feed

B. Dry in oven

C. Weigh again

(NOTE: The difference in the weights is the water or moisture content. Dry matter content should be the same as second weighing. Generally, feed grains are about 90 percent dry matter and 10 percent moisture.)

VIII. Percent of protein required for various livestock

A. Swine

1. Birth to 15 pounds, 20% protein
2. 15 to 50 pounds, 16-18% protein
3. 50 to 125 pounds, 16% protein
4. 125 to 240 pounds, 14% protein

B. Cattle

Body Wt. (lb)	Avg Daily Gain (lb)	Daily Dry Matter per Animal (lb)	Total Protein (lb)	Digestible Protein (lb)
Finishing Steer Calves				
300	1.9	6.8	0.89	0.59
400	2.1	9.8	1.21	0.81
500	2.3	12.3	1.50	1.00
600	2.4	14.4	1.76	1.17
700	2.4	16.3	1.96	1.30
800	2.4	18.0	2.07	1.34
900	2.4	19.6	2.18	1.39
1000	2.3	20.2	2.30	1.49

INFORMATION SHEET

Finishing Heifer Calves

300	1.7	6.8	0.89	0.59
400	1.9	9.8	1.21	0.81
500	2.0	12.4	1.51	1.01
600	2.1	14.7	1.79	1.19
700	2.2	16.6	1.99	1.31
800	2.1	18.0	2.07	1.34
900	2.1	19.4	2.15	1.38

Finishing Yearling Steers

500	2.9	14.7	1.63	1.04
600	2.9	17.0	1.88	1.20
700	2.9	19.1	2.11	1.35
800	2.9	21.1	2.33	1.50
900	2.9	22.9	2.54	1.63
1000	2.8	24.1	2.68	1.72
1100	2.7	25.3	2.82	1.81

Finishing Yearling Heifers

500	2.7	15.7	1.74	1.12
600	2.7	17.7	1.96	1.26
700	2.7	19.8	2.18	1.40
800	2.7	21.9	2.42	1.55
900	2.6	23.7	2.63	1.69
1000	2.4	24.3	2.70	1.72

Finishing Two-Year-Old Steers

700	3.1	21.3	2.26	1.51
800	3.1	23.3	2.57	1.65
900	3.1	25.3	2.80	1.77
1000	3.1	27.4	3.04	1.83
1100	3.1	29.5	3.28	1.89
1200	2.9	30.1	3.34	2.13

Growing Steers

300	0.00	5.6	0.43	0.22
	0.55	6.0	0.68	0.46
	1.10	6.0	0.77	0.51
	1.65	5.9	0.87	0.60
400	0.00	6.8	0.53	0.28
	0.55	8.8	0.90	0.56
	1.10	9.4	1.07	0.70
	1.65	9.5	1.13	0.73

INFORMATION SHEET

500	0.00	8.0	0.62	0.34
	0.55	10.9	1.04	0.63
	1.10	12.5	1.33	0.84
	1.65	12.8	1.43	0.92
600	0.00	9.2	0.71	0.39
	0.55	12.5	1.13	0.68
	1.10	15.3	1.56	0.97
	1.65	15.8	1.76	1.13
700	0.00	10.4	0.81	0.44
	0.55	14.1	1.23	0.72
	1.10	17.8	1.74	1.05
	1.65	18.4	1.96	1.24
800	0.00	11.5	0.90	0.49
	0.55	15.7	1.33	0.75
	1.10	19.7	1.83	1.08
	1.65	20.3	1.95	1.17
900	0.00	12.6	0.99	0.54
	0.55	17.3	1.43	0.77
	1.10	21.7	1.92	1.10
	1.65	22.2	1.94	1.11

Growing Heifers

300	0.00	5.6	0.43	0.22
	0.55	6.2	0.73	0.48
	1.10	5.9	0.76	0.51
	1.65	6.0	0.87	0.61
400	0.00	6.8	0.53	0.28
	0.55	9.0	0.93	0.58
	1.10	9.5	1.09	0.71
	1.65	10.2	1.19	0.77
500	0.00	8.0	0.62	0.34
	0.55	11.1	1.06	0.64
	1.10	12.9	1.39	0.87
	1.65	13.8	1.53	0.97
600	0.00	9.2	0.71	0.39
	0.55	12.7	1.15	0.69
	1.10	16.1	1.65	1.01
	1.65	17.0	1.88	1.20

INFORMATION SHEET

700	0.00	10.4	0.81	0.44
	0.55	14.3	1.25	0.72
	1.10	18.9	1.85	1.11
	1.65	19.7	2.05	1.32
800	0.00	11.5	0.90	0.49
	0.55	15.8	1.34	0.75
	1.10	20.9	1.94	1.14
	1.65	21.7	2.08	1.26
900	0.00	12.6	0.99	0.54
	0.55	17.3	1.43	0.77
	1.10	22.9	2.03	1.18
	1.65	23.7	2.07	1.20
Dry Pregnant Mature Cows				
700	-	11.9	0.69	0.32
800	-	13.1	0.77	0.36
900	-	14.3	0.85	0.40
1000	-	15.1	0.87	0.42
1100	-	16.7	0.97	0.46
1200	-	17.5	1.03	0.49
1300	-	18.7	1.09	0.52
1400	-	19.9	1.14	0.56
Cows Nursing Calves, First 3-4 Months Postpartum				
700	-	18.0	1.64	0.95
800	-	19.4	1.78	1.03
900	-	20.8	1.92	1.12
1000	-	21.9	1.99	1.18
1100	-	23.1	2.14	1.26
1200	-	24.3	2.28	1.34
Bulls, Growth and Maintenance (Moderate Activity)				
600	2.3	18.4	2.60	1.81
700	2.2	19.7	2.72	1.87
800	2.1	21.0	2.83	1.93
900	1.9	22.4	2.98	2.01
1000	1.7	24.4	3.25	2.19
1100	1.5	26.4	3.52	2.38
1200	1.4	26.1	3.45	2.24
1300	1.2	25.7	3.17	2.10
1400	1.0	26.1	3.12	2.04
1500	0.8	26.7	3.11	2.00
1600	0.5	25.7	2.87	1.81
1700	0.2	23.3	2.45	1.51
1800	0.0	22.1	2.21	1.34
1900	0.0	22.9	2.29	1.39
2000	0.0	23.7	2.37	1.44

Courtesy of Dr. Joe Hughes, Animal Science Department, Oklahoma State University, Stillwater, Oklahoma.

INFORMATION SHEET

C. Sheep

NUTRIENT REQUIREMENTS OF SHEEP IN PERCENTAGE OR AMOUNT PER POUND OF TOTAL RATION

(Based on air-dry feed containing 90 percent dry matter)

		Daily Feed		Percentage of ration or amount per lb of feed			
Body weight lb	Daily gain or loss lb	Per animal lb	% live weight	TDN %	Protein %	DP %	Protein #/day
EWES--Nonlactating and first 15 weeks of gestation							
100	0.07	2.6	2.6	50	8.0	4.4	.21
120	0.07	3.0	2.5	50	8.0	4.4	.24
140	0.07	3.4	2.4	50	8.0	4.4	.27
160	0.07	3.8	2.4	50	8.0	4.4	.30
EWES--Last 6 weeks of gestation							
100	0.37	3.8	3.8	52	8.4	4.6	.32
120	0.37	4.2	3.5	52	8.2	4.5	.34
140	0.37	4.6	3.3	52	8.0	4.4	.37
160	0.37	4.8	3.0	52	7.8	4.3	.37
EWES--First 8 to 10 weeks of lactation							
100	-0.08	4.6	4.6	59	8.7	4.8	.40
120	-0.08	5.0	4.2	58	8.4	4.6	.42
140	-0.08	5.5	3.9	56	8.0	4.4	.44
160	-0.08	5.7	3.6	55	8.0	4.4	.46
EWES--Last 12 to 14 weeks of lactation							
100	0.07	3.8	3.8	52	8.4	4.6	.32
120	0.07	4.2	3.5	52	8.2	4.5	.34
140	0.07	4.6	3.3	52	8.0	4.4	.37
160	0.07	4.8	3.0	52	7.8	4.3	.37
EWES--Replacement lambs and yearlings							
60	0.30	2.7	4.5	55	11.0	6.0	.30
80	0.20	3.2	4.0	50	8.7	4.8	.28
100	0.14	3.4	3.4	50	7.6	4.2	.26
120	0.07	3.4	2.8	50	7.0	3.9	.24

INFORMATION SHEET

RAMS--Lambs and yearlings

80	0.40	3.2	4.0	62	10.0	5.5	.32
100	0.30	3.7	3.7	57	8.6	4.7	.32
120	0.20	4.2	3.5	50	7.6	4.2	.32
140	0.10	4.6	3.3	50	6.9	3.8	.32
160	0.10	4.8	3.0	50	6.6	3.6	.32

LAMBS--Fattening

60	0.35	2.7	4.5	55	12.0	6.6	.32
70	0.40	3.1	4.4	58	11.0	6.1	.34
80	0.45	3.4	4.3	62	10.7	5.9	.36
90	0.45	3.7	4.2	62	9.5	5.3	.35
100	0.40	3.9	3.9	62	9.4	5.2	.37

Courtesy of Dr. Joe Hughes, Animal Science Department, Oklahoma State University, Stillwater, Oklahoma.

IX. Comparison of feed composition

(NOTE: The following information was taken from Morrison's *Feeds and Feeding*, Table I.)

Feed	DP	TDN	Cost/lb
Milo grain	8.5%	79.4%	$ .042
Corn, dent, Grade #2	7.0%	80.0%	$ .061
Wheat, average all types	11.1%	80.0%	$ .070
Oats (not including Pacific Coast states)	9.4%	70.1%	$ .056
Alfalfa hay, average all analysis	10.9%	50.7%	$ .035

A. Cost per pound of protein

Milo .042 ÷ .085 = $ .494/# protein
Corn .061 ÷ .070 = $ .871/# protein
Wheat .070 ÷ .111 = $ .630/# protein
Oats .056 ÷ .094 = $ .596/# protein
Alfalfa .035 ÷ .109 = $ .321/# protein

B. Cost per pound of TDN

Milo .042 ÷ .794 = $ .052/# TDN
Corn .061 ÷ .800 = $ .076/# TDN
Wheat .070 ÷ .800 = $ .087/# TDN
Oats .056 ÷ .701 = $ .079/# TDN
Alfalfa .035 ÷ .507 = $ .069/# TDN

INFORMATION SHEET

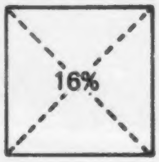
X. Determining total percentage of DP and TDN in feeds--Use Morrison's *Feeds and Feeding,* Table I

XI. Balancing rations using Pearson's square method

- A. Select amount of protein required
- B. Place in square
- C. Select feeds
- D. Cross-subtract

(NOTE: This gives parts of each feed needed in the ration.)

Example:



	Part	%	#/100#
Milo 8.5%	25	77	77#
SBM 41.0%	7.5	23	23#
	32.5	100%	100#

XII. Balancing rations for dry matter, digestible protein, and total digestible nutrients--Trial and error method

- A. Determine type of animal
- B. Look up requirements of the animal in Morrison's *Feeds and Feeding,* Table III
- C. Select feeds to use
- D. Look up composition (Morrison's *Feeds and Feeding,* Table I)
- E. Determine amount of each feed in the ration
- F. Compute the ration

INFORMATION SHEET

Example:

	DM	DP	TDN
Corn	85.0%	7.0%	80.0%
Oats	90.2%	9.4%	70.1%
Alfalfa hay	90.5%	10.9%	50.7%

Alfalfa 9.4#	DM	DP	TDN
	.905	.109	.507
	x9.4	x9.4	x9.4
	8.507	1.024	4.766
Corn 1.5#	.850	.070	.794
	x1.5	x1.5	x1.5
	1.275	.105	1.191
Oats 1.5#	.920	.094	.701
	x1.5	x1.5	x1.5
	1.353	.141	1.051

Example of trial and error method, 400# dairy heifer

Ration too high in protein

	Dry matter Lbs.	Digestible protein Lbs.	Total digestible nutrients Lbs.
Requirements	9.1-11.4	0.76-0.87	6.0-7.0
Ration			
Alfalfa hay, 9.4 lbs.	8.51	1.02	4.77
Corn, No. 2, 1.5 lbs.	1.28	0.10	1.20
Oats, 1.5 lbs.	1.35	0.14	1.05
Total	11.14	1.26	7.02

Ration too low in protein

	Dry matter Lbs.	Digestible protein Lbs.	Total digestible nutrients Lbs.
Requirements	9.1-11.4	0.76-0.87	6.0-7.0
Ration			
Timothy hay, 6.0 lbs.	5.34	0.18	2.95
Corn silage, 10.0 lbs.	2.76	0.12	1.83
Corn, No. 2, 1.5 lbs.	1.28	0.10	1.20
Oats, 1.5 lbs.	1.35	0.14	1.05
Total	10.73	0.54	7.03

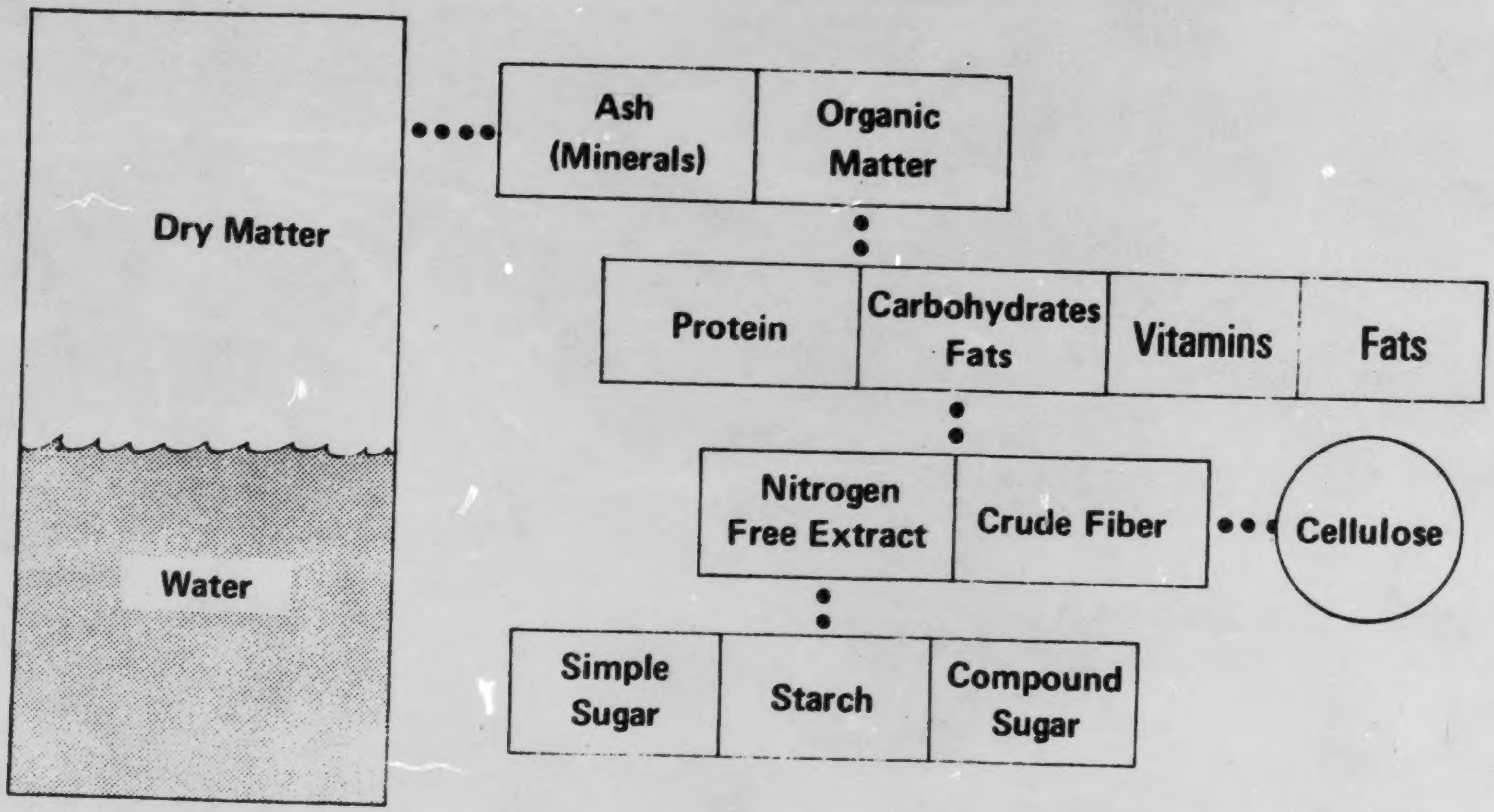
300-B

INFORMATION SHEET

A balanced ration

	Dry matter Lbs.	Digestible protein Lbs.	Total digestible nutrients Lbs.
Requirements	9.1-11.4	0.76-0.87	6.0-7.0
Ration			
Timothy hay, 6.0 lbs.	5.34	0.18	2.95
Corn silage, 10.0 lbs.	2.76	0.12	1.83
Corn, No. 2, 0.75 lb.	0.64	0.05	0.60
Oats, 0.75 lb.	0.68	0.07	0.53
Linseed meal, 1.5 lbs.	1.37	0.46	1.13
Total	10.79	0.88	7.04

Feed Composition



Dry Matter

Water

Ash (Minerals)

Organic Matter

Protein

Carbohydrates Fats

Vitamins

Fats

Nitrogen Free Extract

Crude Fiber

Cellulose

Simple Sugar

Starch

Compound Sugar

Classification of Concentrates

OIL MEALS

- Soybean
- Cottonseed
- Linseed
- Peanut

MOLASSES

- Cane
- Beet

GRAIN BY-PRODUCTS

- Wheat bran
- Wheat standard middlings

ANIMAL PRODUCTS

- Meat scraps
- Tankage
- Fish meal
- Dried dairy products

GRAINS

- Barley
- Wheat
- Corn
- Milo
- Oats

Classification of Roughages

GREEN ROUGHAGES

Roots

Grasses

Tubers

DRY ROUGHAGES

Hays—
Grass and Legume

Hulls—
Peanut and Cottonseed

Straw—
Oat, Wheat,
Barley, and Rice

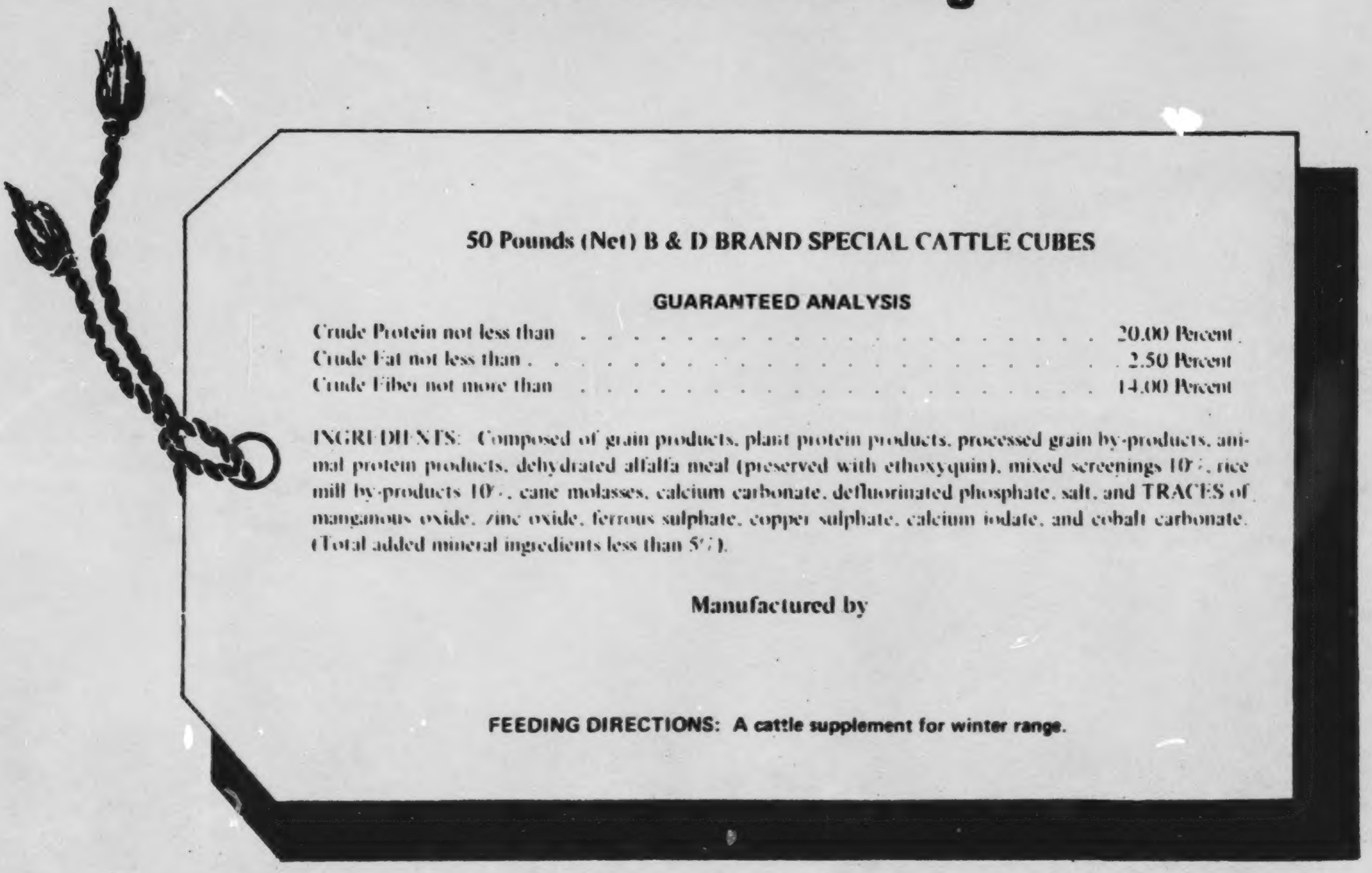
SILAGE

Corn

Sorghum

Grass

Commercial Feed Tag



50 Pounds (Net) B & D BRAND SPECIAL CATTLE CUBES

GUARANTEED ANALYSIS

Crude Protein not less than	20.00 Percent
Crude Fat not less than	2.50 Percent
Crude Fiber not more than	14.00 Percent

INGREDIENTS: Composed of grain products, plant protein products, processed grain by-products, animal protein products, dehydrated alfalfa meal (preserved with ethoxyquin), mixed screenings 10%, rice mill by-products 10%, cane molasses, calcium carbonate, defluorinated phosphate, salt, and TRACES of manganous oxide, zinc oxide, ferrous sulphate, copper sulphate, calcium iodate, and cobalt carbonate. (Total added mineral ingredients less than 5%).

Manufactured by

FEEDING DIRECTIONS: A cattle supplement for winter range.

COMPOSITION AND CLASSIFICATION OF FEEDS
UNIT IX

ASSIGNMENT SHEET NO. 1--DETERMINING TDN AND DP CONTENT OF BASIC FEEDS

Using Table I of Morrison's *Feeds and Feeding*, calculate the TDN and DP of the following feeds.

1. How many pounds of TDN are there in:

   a. 50 pounds of No. 1 yellow corn

   b. 30 pounds of milo grain

   c. 50 pounds of wheat, average all types

   d. 50 pounds of oats, Pacific Coast states

   e. 20 pounds of alfalfa hay, all analyses

2. How many pounds of DP are there in each of the above pounds of feed?

   a.

   b.

   c.

   d.

   e.

COMPOSITION AND CLASSIFICATION OF FEEDS
UNIT IX

ASSIGNMENT SHEET NO. 2--BALANCING RATIONS USING PEARSON'S SQUARE

Determine the total parts needed in a 16% ration using 8.5% DP milo and 41.0% cottonseed meal. Show your work.

COMPOSITION AND CLASSIFICATION OF FEEDS
UNIT IX

ASSIGNMENT SHEET NO. 3--WORKING A SAMPLE RATION FOR FATTENING A BEEF ANIMAL

Balance a sample ration for an 800 pound beef fatening anumal for DM, TDN, and DP. Use Morrison's *Feeds and Feeding* for reference.

Animal Requirements	DM	DP	TDN

Use the following grains:

Corn, dent, Grade No. 1

Soybean meal 41%

Cottonseed hulls

COMPOSITION AND CLASSIFICATION OF FEEDS
UNIT IX

ASSIGNMENT SHEET NO. 4–WORKING A SAMPLE RATION FOR FATTENING SWINE

Balance a sample ration for a 125 pound swine fattening animal for DM, DP, and TDN. Use Morrison's *Feeds and Feeding* for reference.

Animal requirements	DM	DP	TDN

Use the following grains:

Wheat, average all types

Corn, dent, Grade No. 1

Soybean meal 41%

COMPOSITION AND CLASSIFICATION OF FEEDS
UNIT IX

ASSIGNMENT SHEET NO. 5--DETERMINE PROTEIN REQUIREMENTS FOR VARIOUS ANIMALS

From the tables provided in the information sheet, determine the pounds of protein required per day per animal.

Calculation can also be made by using the following formula:

Pounds dry matter or pounds of feed per day per animal x percent of protein of the ration = lbs. of protein per day per animal.

Check answers found in the tables by calculating problems 1 and 2. Use only table values on the remainder of the problems.

1. 70 lb. lamb to gain 0.40 lb. per day

2. 140 lb. nonlactating ewe in first 15 weeks of gestation to gain 0.07 lb. per day

3. 500 lb. growing heifer to gain 0.55 lb. per day

4. 600 lb. growing steer to gain 1.10 lb. per day

5. 1200 lb. dry pregnant mature cow to maintain her weight

6. 1800 lb. bull to maintain weight

COMPOSITION AND CLASSIFICATION OF FEEDS
UNIT IX

TEST

1. Match the terms on the right to the correct definition.

______a. Feed that is high in total digestible nutrients and low in fiber

______b. Organic compound composed of carbon, hydrogen, and oxygen

______c. Feed from crops cured and stored green or without drying

______d. That portion of a feed which is digested and used in the animal's body

______e. Protein or vitamin added to a feed

______f. Ration which furnishes the several nutrients in such proportion and amount as will properly nourish a given animal for twenty-four hours

______g. Feed that is high in fiber or nondigestible material and low in total digestible nutrients

______h. Average percentage of dry material in a feed found by weighing the feed, drying by heat, and reweighing

______i. Portion of crude protein which may be digested by the animal

______j. Feed allowed for a given animal during a day of twenty-four hours

______k. Tough part of a feed; not very digestible

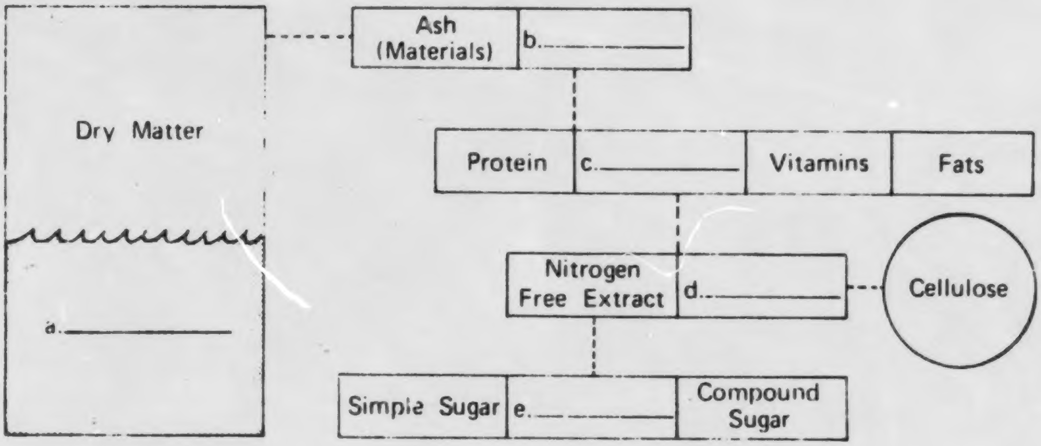
______l. Organic compound consisting of carbon, hydrogen, oxygen, nitrogen, and sulfur

______m. Plant growth available to animals on the range or in the pasture

______n. Total amount of protein contained in a feed

1. Roughage
2. Concentrate
3. Silage
4. Ration
5. Balanced ration
6. Fiber
7. Supplement
8. Crude protein
9. Digestible protein
10. Total digestible nutrients (TDN)
11. Pasturage
12. Protein
13. Fat
14. Dry matter (DM)

2. Complete the following chart showing the composition of a feed.


Dry Matter
a. ____________
Ash (Materials)
b. ____________
Protein
c. ____________
Vitamins
Fats
Nitrogen Free Extract
d. ____________
Cellulose
Simple Sugar
e. ____________
Compound Sugar

3. List three methods used to determine value of a feed.

a.

b.

c.

4. Classify the following feeds by placing a "C" in front of the concentrates and an "R" in front of the roughages.

_____a. Grains (corn)

_____b. Hays (alfalfa)

_____c. Grain by-products (wheat bran)

_____d. Molasses (cane)

_____e. Cottonseed hulls

_____f. Wheat straw

_____g. Soybean oil meal

_____h. Meat scraps

5. Select from the list below three requirements that every commercial feed company must state on its feed tag by placing an "X" in the blanks.

_____a. Percentage of corn

_____b. Minimum of crude protein

_____c. Minimum of crude fat

_____d. Minimum of crude fiber

_____e. Maximum of crude protein

_____f. Maximum of crude fiber

6. Classify the following list of sugars by placing a "C" in front of the compound sugars and an "S" in front of the simple sugars.

_____a. Glucose

_____b. Maltose

_____c. Galactose

_____d. Fructose

_____e. Sucrose

_____f. Lactose

7. Describe in a short paragraph the procedure for determining water and dry matter content of a feed.

8. Match the percent of protein required in a ration on the right to the appropriate size of pigs.

_____a. 50 lbs to 125 lbs   1. 20%

_____b. Birth to 15 lbs   2. 16 - 18%

_____c. 15 to 50 lbs   3. 16%

_____d. 125 to 240 lbs   4. 14%

9. Compare the cost per pound of protein for the following feeds.

(Cost per pound ÷ DP = cost per pound of protein.)

	Cost per pound of protein
a. Milo costs $4.50/wt - DP 8.5%	______
b. Oats cost $6.00/wt - DP 9.4%	______
c. Which costs more per pound of protein	______

10. Determine the percentage of DP and TDN in the following feeds by using the table given below.

	% DP	% TDN
a. Corn, dent, Grade #2	______	______
b. Oats (not including Pacific Coast states)	______	______
c. Alfalfa hay, all analyses	______	______

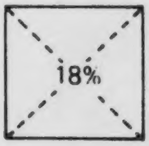
TABLE I. Average composition and digestible nutrients

Feeding stuff	Total dry matter	Dig. protein	Total dig. nutrients	Nutritive ratio	Average total composition					No. of anal.
					Protein	Fat	Fiber	N-free extract	Mineral matter	
Dry Roughages	Per ct.	Per ct.	Per ct.	1:	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	
Alfalfa hay, all analyses	90.5	10.9	50.7	3.7	15.3	1.9	28.6	36.7	8.0	1,288
Alfalfa hay, very leafy (less than 25% fiber)	90.5	12.8	52.7	3.1	17.5	2.4	22.7	39.5	8.4	219
Alfalfa hay, leafy (25–28% fiber)	90.5	11.7	51.2	3.4	16.0	2.1	27.2	36.8	8.1	294
Alfalfa hay, good (28–31% fiber)	90.5	10.2	50.3	3.9	14.6	1.8	29.6	36.5	8.0	323
Corn, dent, Grade No. 1	87.0	6.9	81.9	10.9	8.9	4.0	2.0	70.8	1.3	169
Corn, dent, Grade No. 2	85.0	6.7	80.1	11.0	8.7	3.9	2.0	69.2	1.2	
Corn, dent, Grade No. 3 *	83.5	6.5	78.6	11.1	8.5	3.8	2.0	68.0	1.2	
Oat mill by-product, high grade *	91.5	7.9	58.8	6.4	10.8	3.9	17.7	53.2	5.9	10
Oat mill by-product, with molasses *	92.4	3.6	37.2	9.3	5.5	1.4	21.1	55.0	6.4	31
Oats, not including Pacific Coast states	90.2	9.4	70.1	6.5	12.0	4.6	11.0	58.6	4.0	498
Oats, Pacific Coast states *	91.2	7.0	72.2	9.3	9.0	5.4	11.0	62.1	3.7	118
Oats, ground, usual commercial feed grade *	89.8	9.0	68.5	6.6	11.6	4.1	12.1	57.7	4.3	419
Oats, light weight	91.2	8.3	59.8	6.2	12.0	4.5	15.1	51.9	4.7	32
Oats, wild	89.0	9.1	53.9	4.9	12.7	5.5	15.2	50.9	4.7	2

11. Balance a ration using Pearson's square method.

Corn 7.0%

Soybean meal 44%



	Parts		÷100=
a.	______	d	______
b.	______	e.	______
c.	______		100=

12. Balance a ration for digestible protein, dry matter, and total digestible nutrients using the trial and error method.

13. Determine protein requirements for various animals.

(NOTE: If these have not been completed prior to the test, ask the instructor when the above activities should be completed.)

COMPOSITION AND CLASSIFICATION OF FEEDS
UNIT IX

ANSWERS TO TEST

1. a. 2
   b. 13
   c. 3
   d. 10
   e. 7
   f. 5
   g. 1
   h. 14
   i. 9
   j. 4
   k. 6
   l. 12
   m. 11
   n. 8

2. a. Water
   b. Organic matter
   c. Carbohydrates
   d. Crude fiber
   e. Starch

3. a. Cost per pound of TDN
   b. Cost per pound of protein
   c. Cost per pound of feed

4. a. C
   b. R
   c. C
   d. C
   e. R
   f. R
   g. C
   h. C

5. b, c, f

6. a. S
   b. C
   c. S
   d. S
   e. C
   f. C

7. Description should include:
   a. Weigh feed
   b. Dry in oven
   c. Weigh again

8. a. 3
   b. 1
   c. 2
   d. 4

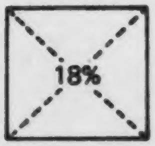
9. a. $ .53
   b. $ .64
   c. Oats

10.

	% DP	% TDN
a.	6.7	81.9
b.	9.4	70.1
c.	10.9	50.7

11.

Corn 7.0%



SBM 44%

	Parts		:/100#
a.	26	d.	70
b.	11	e.	30
c.	37		100#

12. Evaluated to the satisfaction of the instructor.

13. Evaluated to the satisfaction of the instructor.

COMPOSITION AND CLASSIFICATION OF FEEDS
UNIT IX

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

1. a. 40.9 lbs. TDN
   b. 23.8 lbs. TDN
   c. 40.0 lbs. TDN
   d. 38.1 lbs. TDN
   e. 10.1 lbs. TDN
2. a. 3.45 lbs. DP
   b. 2.55 lbs. DP
   c. 5.55 lbs. DP
   d. 3.50 lbs. DP
   e. 2.18 lbs. DP

Assignment Sheet #2

1. 25.0 parts of milo
   7.5 parts of cottonseed meal
   32.5 total parts

Assignment Sheets #3 and #4--Instructor to supply answers

Assignment Sheet #5

1. Table: .34
   Calculation: 3.1# x 11.0% = .34
2. Table: .27
   Calculation: 3.4# x 8.0% = .27

		DP	Total Protein
3.	Table	.64	1.06
4.	Table	.97	1.56
5.	Table	.49	1.03
6.	Table	1.34	2.21

ANIMAL DIGESTION
UNIT X

UNIT OBJECTIVE

After completion of this unit, the student should be able to label the parts of various digestive tracts and classify animals according to types of stomachs. The student should also be able to list functions of hormones and describe the chemical and digestive processes. This knowledge will be evidenced by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with animal digestion to the correct definitions.
2. Label drawings showing parts of the digestive tracts of the cow, the pig, and the chicken.
3. State in writing the primary difference between a simple and ruminant animal.
4. Classify animals according to simple stomach and ruminant.
5. List three functions of hormones in the digestive process.
6. Select from a list the digestive processes that take place in the mouth.
7. List five glands that aid in the breakdown of feeds.
8. Describe the chemical and mechanical digestive processes.

ANIMAL DIGESTION
UNIT X

SUGGESTED ACTIVITIES

I. Instructor:

  A. Provide student with objective sheet.

  B. Provide student with information sheet.

  C. Make transparencies.

  D. Discuss unit and specific objectives.

  E. Discuss information sheet.

  (NOTE: If facilities are available, the instructor may want to take the class to a slaughter facility to see digestive tracts of various animals.)

  F. Give test.

II. Student:

  A. Read objectives.

  B. Study information sheet.

  C. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

  A. Objectives

  B. Information sheet

  C. Transparency masters

    1. TM 1--Compound Digestive System of the Cow

    2. TM 2--Simple Digestive System of Swine

    3. TM 3--Simple Digestive System of the Chicken

    4. TM 4--Simple Digestive System of Horse

    5. TM 5--Comparison of Horse, Cow, and Swine Digestive Systems

  D. Test

  E. Answers to test

II. References:

A. Cassard, Daniel W., and Elwood M. Juergenson. *Approved Practices in Feeds and Feeding*. Danville, Illinois: The Interstate Printers and Publishers, Inc.

B. Morrison, Frank B. *Feeds and Feeding, Abridged*, 9th ed. Claremont, Ontario, Canada: Morrison Publishing Company, 1961.

C. Henderson, H. O., and Paul M. Reaves. *Dairy Cattle Feeding and Management*. New York: John Wiley and Sons, Inc.

D. Bundy, Clarence E., and Ronald V. Diggins. *Beef Production*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.

E. Bundy, Clarence E., and Ronald V. Diggins. *Livestock and Poultry Production*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1975.

F. *Animal Nutrition*. St. Louis, Missouri: Ralston Purina Company, 1964.

G. *Horse Husbandry*. Olympia, Washington: Coordinating Council for Occupational Education, 1973.

H. Ensminger, M. E. *Horses and Horsemanship*. Danville, Illinois: Interstate Printers and Publishers, 1965.

ANIMAL DIGESTION
UNIT X

INFORMATION SHEET

I. Terms and definitions

A. Digestion--Process of breaking down and dissolving feeds so that the body can absorb them

B. Absorption--Passing of food materials from the digestive tube into the body after they are digested and dissolved

C. Enzyme--Mysterious organic compound which brings about changes in other organic compounds without being changed or broken down itself

D. Hormone--Internal body secretion that regulates various body processes

E. Mastication--Grinding or chewing of food to aid in digestion

F. Metabolism--Sum of all physical and chemical changes which take place within an organism

(NOTE: This process includes both material and energy changes.)

G. Excretion--Removal of water and waste material from the body

H. Regurgitation--Process by which food eaten by a ruminant is carried from the second stomach and the rumen into the gullet and then forced up to the mouth for chewing

I. Feces--Manure; undigested material and wastes expelled at the end of the digestive tube

J. Pancreatic juice--Clear, watery fluid with an alkaline reaction secreted by the pancreas; aids in feed breakdown

K. Bile--Thin, yellowish brown or greenish liquid secreted by the liver

L. Ruminant animal--Animal with a four compartment stomach

M. Villi--Finger like projection lining last half of small intestine increasing surface area for absorption.

II. Parts of digestive tracts

A. Cow (Transparency 1)

1. Salivary ducts

2. Pharynx

3. Esophagus

INFORMATION SHEET

4. Rumen
5. Reticulum
6. Omasum
7. Abomasum
8. Small intestine
9. Cecum
10. Colon or large intestine
11. Anus

B. Pig (Transparency 2)

1. Pharynx
2. Esophagus
3. Stomach
4. Small intestine
5. Cecum
6. Large intestine
7. Colon
8. Rectum

C. Chicken (Transparency 3)

1. Esophagus
2. Crop
3. Proventriculus
4 Gizzard
5. Liver
6. Pancreas
7. Duodenum

INFORMATION SHEET

8. Small intestine
9. Cecum
10. Large intestine
11. Rectum
12. Cloaca
13. Vent

D. Horse (Transparency 4)

1. Esophagus
2. Stomach
3. Small intestine
4. Cecum
5. Large intestine
6. Pelvic flexure
7. Colon
8. Rectum

E. Digestive tracts - Horse, Cow and Pig Compared (Transparency 5)

III. Primary difference between simple stomach and ruminant--Simple stomach animals have only one compartment stomachs while ruminants have four compartment stomachs

IV. Animal classification according to types of stomachs

A. Simple stomach - one compartment

1. Pig
2. Chicken
3. Rabbit
4. Man
5. Dog
6. Horse

INFORMATION SHEET

- B. Compound stomach - four compartments
    - 1. Cow
    - 2. Sheep
    - 3. Goat

V. Functions of hormones

- A. Digestion - Example: Pancreatic juice; produced by the pancreas
- B. Metabolism - Example: Thyroxine; produced by thyroid gland
- C. Milk secretion - Example: Lactogen; produced by pituitary gland
- D. Let-down of milk - Example: lactogen; produced by pituitary gland
- E. Development of sexual characteristics - Example: Estrogen, progesterone; produced by the sex glands

VI. Digestive processes in the mouth

- A. Chewing or grinding of feed
- B. Secretion of saliva

VII. Glands that aid in feed breakdown

- A. Thyroid - Secretes thyroxine
- B. Parathyroid - Concerned with calcium metabolism
- C. Pituitary - Secretes lactogen
- D. Adrenal - Secretes adrenaline
- E. Pancreas - Secretes pancreatic juice
- F. Liver - Secretes bile, which breaks down fats

VIII. Digestive processes

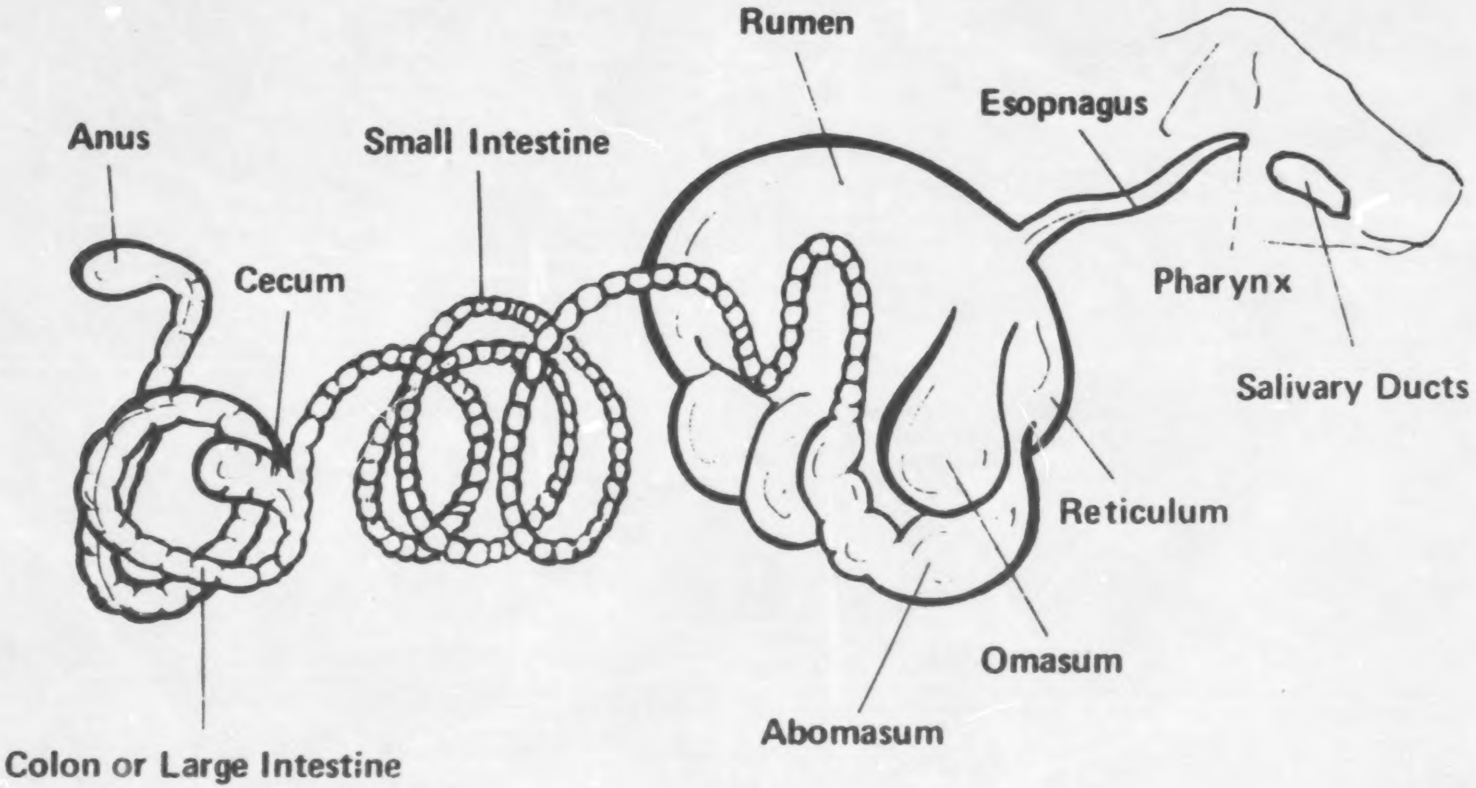
- A. Mechanical
    - 1. Chewing
    - 2. Grinding

INFORMATION SHEET

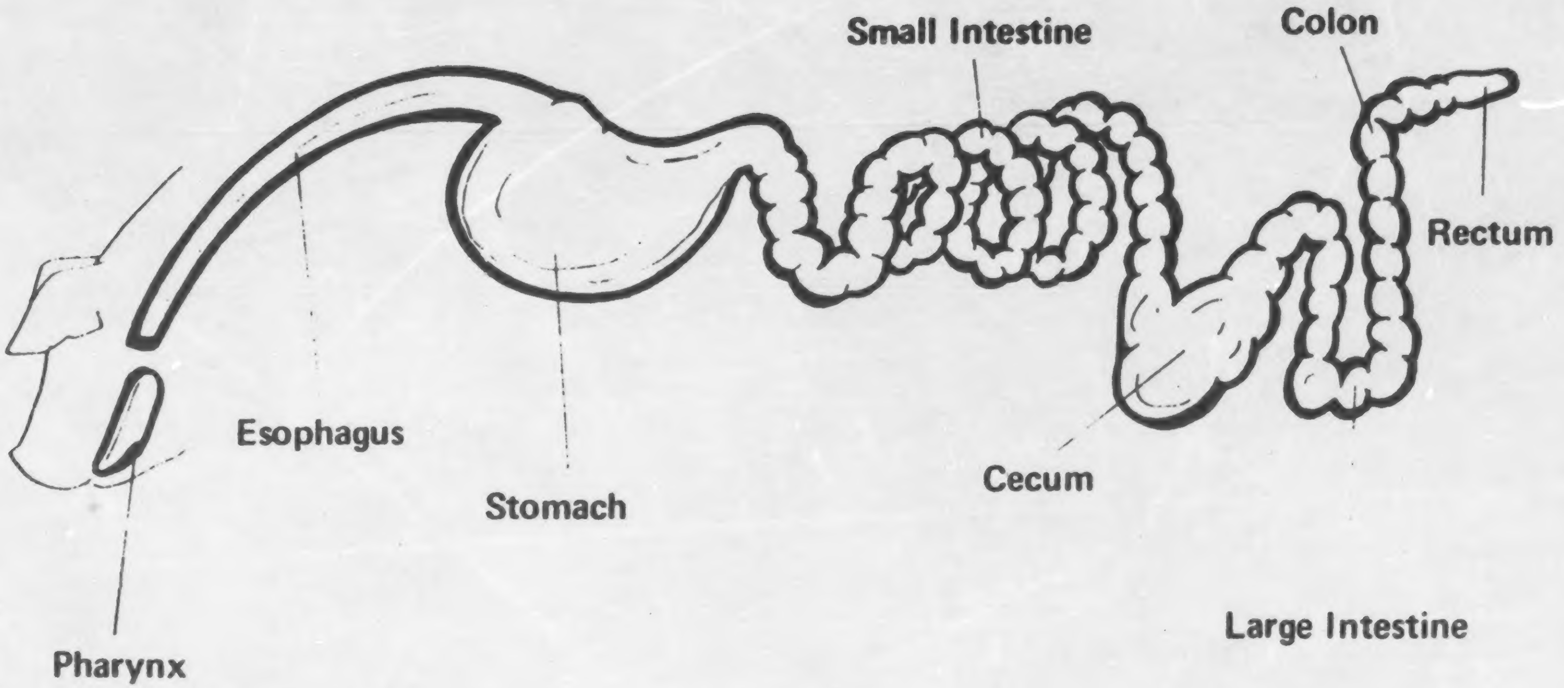
B. Chemical

1. Saliva--Produced in the mouth
2. Juices--Secreted into the stomach and intestines

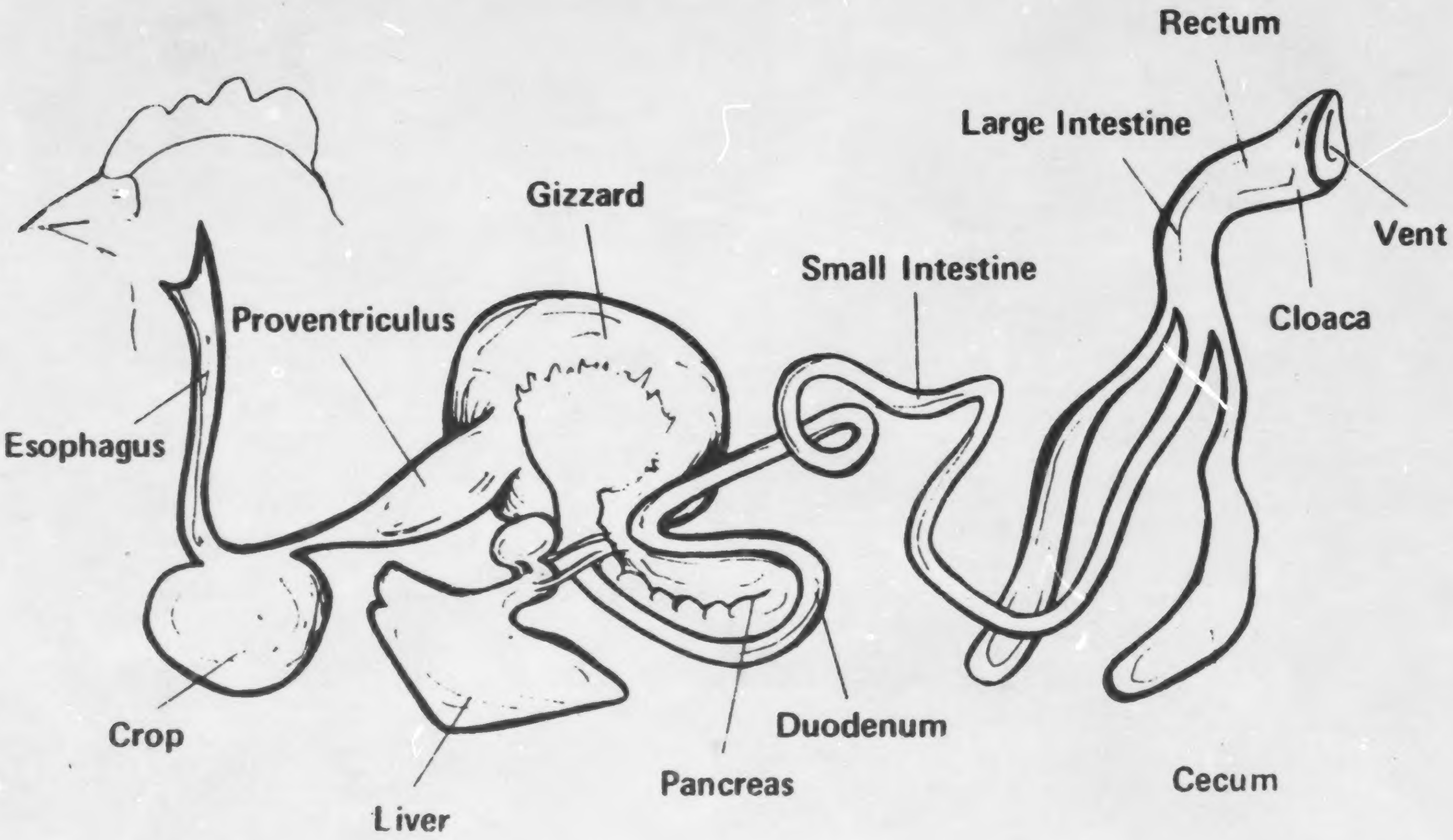
Compound Digestive System of the Cow


Rumen
Esopnagus
Anus
Small Intestine
Cecum
Pharynx
Salivary Ducts
Reticulum
Omasum
Abomasum
Colon or Large Intestine

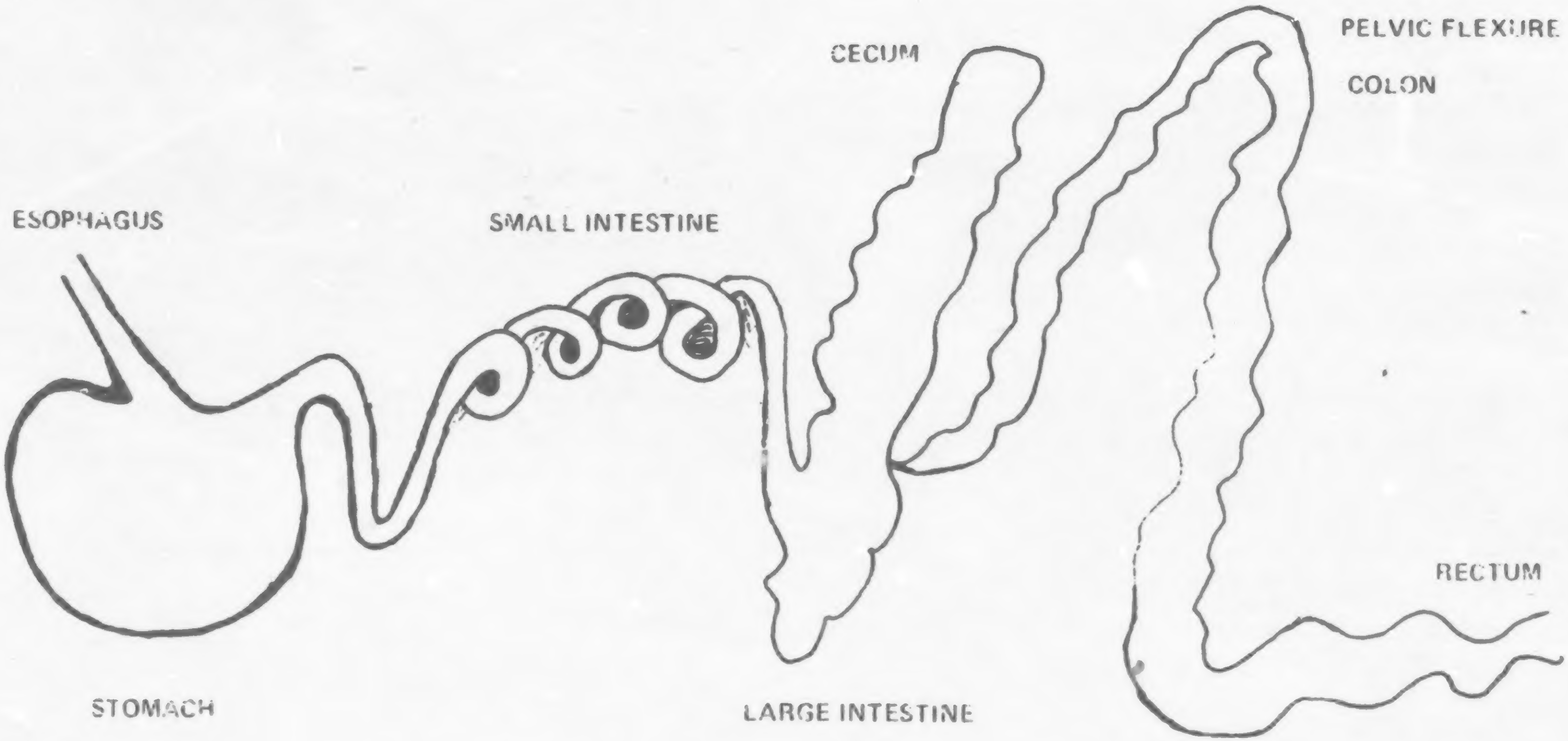
Simple Digestive System of Swine


Small Intestine
Colon
Rectum
Esophagus
Stomach
Cecum
Pharynx
Large Intestine

Simple Digestive System of the Chicken


Rectum
Large Intestine
Gizzard
Vent
Small Intestine
Proventriculus
Cloaca
Esophagus
Crop
Duodenum
Liver
Pancreas
Cecum

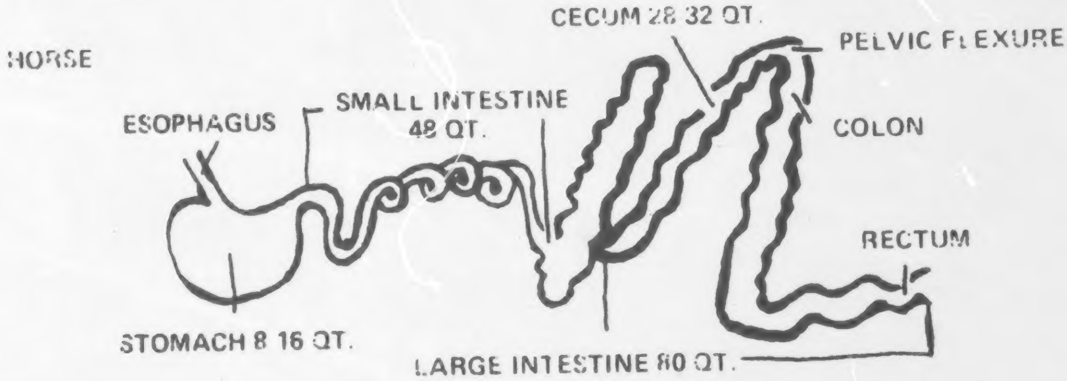
Digestive Tract-Horse

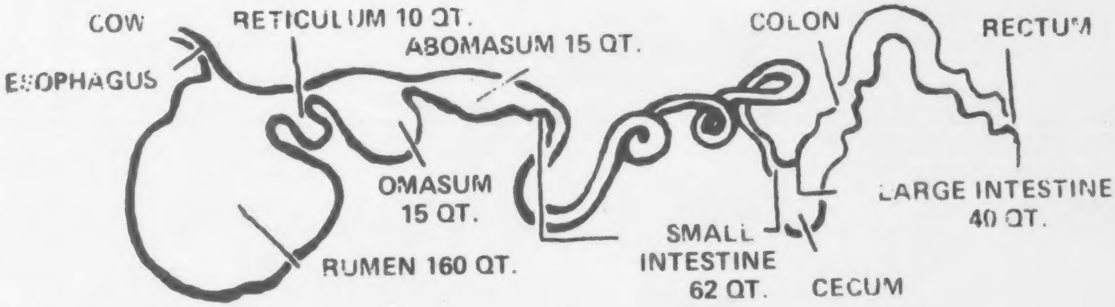

ESOPHAGUS
SMALL INTESTINE
CECUM
PELVIC FLEXURE
COLON
RECTUM
STOMACH
LARGE INTESTINE

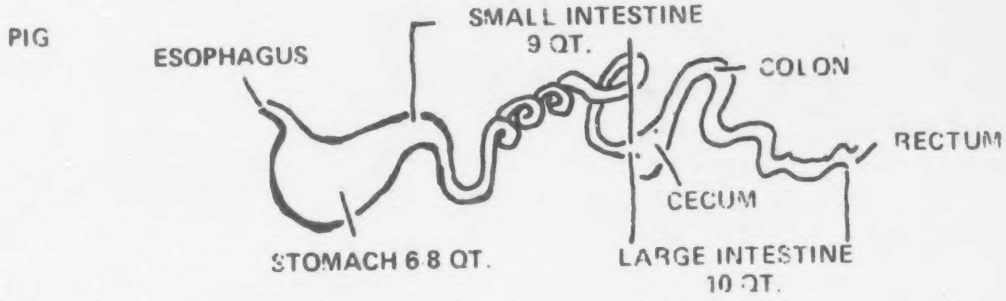
Source: Horse Husbandry, Coordinating Council for Occupational Education, Olympia, Washington 98504

B-345-B

Digestive Tracts-Horse, Cow, Pig Compared


HORSE
CECUM 28 32 QT.
PELVIC FLEXURE
ESOPHAGUS
SMALL INTESTINE 48 QT.
COLON
RECTUM
STOMACH 8 16 QT.
LARGE INTESTINE 80 QT.


COW
ESOPHAGUS
RETICULUM 10 QT.
ABOMASUM 15 QT.
COLON
RECTUM
OMASUM 15 QT.
RUMEN 160 QT.
SMALL INTESTINE 62 QT.
CECUM
LARGE INTESTINE 40 QT.


PIG
ESOPHAGUS
SMALL INTESTINE 9 QT.
COLON
RECTUM
CECUM
STOMACH 6 8 QT.
LARGE INTESTINE 10 QT.

Source: Horse Husbandry, Coordinating Council for Occupational Education, Olympia, Washington 98504

ANIMAL DIGESTION
UNIT X

TEST

1. Match terms on the right to the correct definition.

___ a. Process by which food eaten by ruminant is carried from the second stomach and the rumen into the gullet and then forced up to the mouth for chewing

___ b. Mysterious organic compound which brings about changes in other organic compounds without being changed or broken down itself

___ c. Thin, yellowish brown or greenish liquid secreted by the liver

___ d. Removal of water and waste material from the body

___ e. Animal with a four compartment stomach

___ f. Sum of all physical and chemical changes which take place within an organism

___ g. Grinding or chewing of food to aid in digestion

___ h. Clear, watery fluid with an alkaline reaction secreted by the pancreas; aids in feed breakdown

___ i. Manure; undigested material and wastes expelled at the end of the digestive tube

___ j. Process of breaking down and dissolving feeds so that the body can absorb them

___ k. Passing of food materials from the digestive tube into the body after they are digested and dissolved

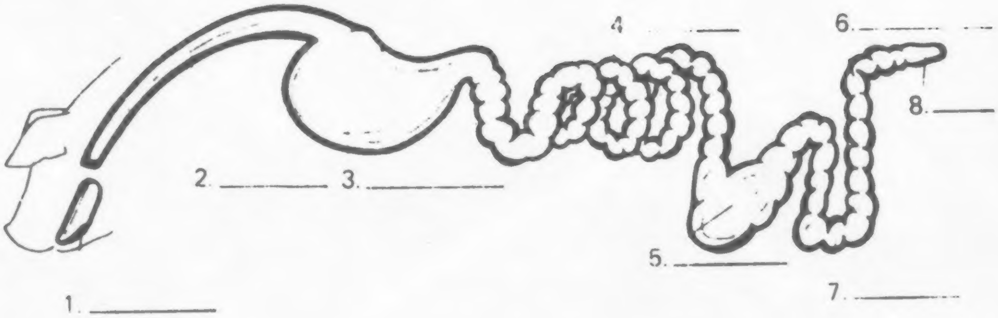
___ l. Internal body secretion that regulates various body processes

___ m. Fingerlike projection lining the last half of the small intestine

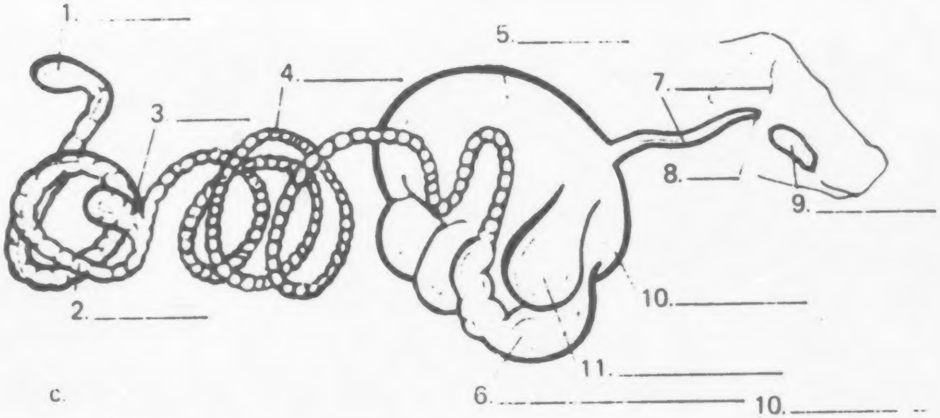
1. Digestion
2. Absorption
3. Enzyme
4. Hormone
5. Mastication
6. Metabolism
7. Excretion
8. Regurgitation
9. Feces
10. Pancreatic juice
11. Bile
12. Ruminant animal
13. Villi

2. Label the following drawings by writing the correct name in the blank.

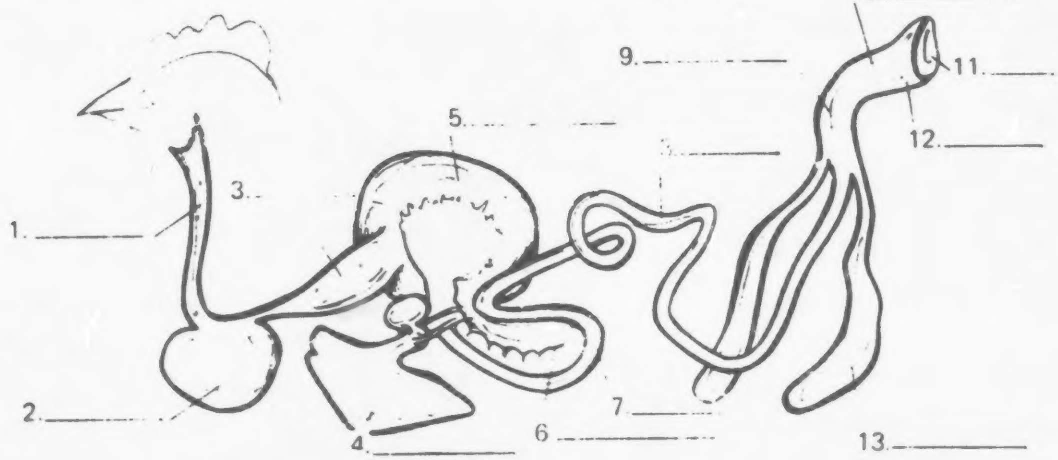
a.



b.


1.
5.
4.
7.
3.
8.
9.
10.
2.
11.
6.

c.


10.
9.
11.
5.
12.
8.
3.
1.
7.
2.
6
4.
13.

3. State in writing the primary difference between a simple stomach and ruminant animal.

4. Classify the following animals by placing an "S" in the blank for a simple stomach animal and an "R" in the blank for a ruminant animal.

_____a. Horse	_____e. Goat
_____b. Dog	_____f. Man
_____c. Cow	_____g. Rabbit
_____d. Pig	_____h. Sheep

5. List three functions of hormones in the digestive process.

a.

b.

c.

6. Select from the list below the digestive processes that take place in the mouth by placing an "X" in the blank.

_____a. Absorption

_____b. Excretion

_____c. Chewing or grinding of feed

_____d. Metabolism

_____e. Secretion of saliva

7. List five glands that aid in the breakdown of feeds.

a.

b.

c.

d.

e.

8. Describe the chemical and mechanical digestive processes.

ANIMAL DIGESTION
UNIT X

ANSWERS TO TEST

1. a. 8
   b. 3
   c. 11
   d. 7
   e. 12
   f. 6
   g. 5
   h. 10
   i. 9
   j. 1
   k. 2
   l. 4
   m. 13

2. a. Swine
      1) Pharynx
      2) Esophagus
      3) Stomach
      4) Small intestine
      5) Cecum
      6) Colon
      7) Large intestine
      8) Rectum
   b. Cow
      1) Anus
      2) Colon or large intestine
      3) Cecum
      4) Small intestine
      5) Rumen
      6) Abomasum
      7) Esophagus

        8) Pharynx
        9) Salivary ducts
        10) Reticulum
        11) Omasum
    c. Chicken
        1) Esophagus
        2) Crop
        3) Proventriculus
        4) Liver
        5) Gizzard
        6) Pancreas
        7) Duodenum
        8) Small intestine
        9) Large intestine
        10) Rectum
        11) Vent
        12) Cloaca
        13) Cecum

3. Simple stomach animals have only one compartment stomachs while ruminants have four compartment stomachs

4. a. S
    b. S
    c. R
    d. S
    e. R
    f. S
    g. S
    h. R

5. Any three of the following:
    a. Digestion
    b. Metabolism

   c. Milk secretion
   d. Let-down of milk
   e. Development of sexual characteristics

6. c, e

7. Any five of the following:
   a. Thyroid
   b. Parathyroid
   c. Pituitary
   d. Adrenal
   e. Pancreas
   f. Liver

8. Description should include:
   a. Mechanical
      1. Chewing
      2. Grinding
   b. Chemical
      1. Saliva--Produced in the mouth
      2. Juices--Secreted into the stomach and intestines

ANIMAL NUTRIENTS
UNIT XI

UNIT OBJECTIVE

After completion of this unit, the student should be able to discuss the effects of feeding antibiotics and write the purpose of feed additives. The student should be able to match nutrients with their sources, functions, and deficiency symptoms. This knowledge will be evidenced by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with animal nutrients to the correct definitions.
2. List the six major classes of nutrients.
3. Select from a list two types of protein.
4. Match nutrients with their functions.
5. Select from a list the major minerals.
6. List three minor or trace minerals.
7. Match nutrients to their sources.
8. Match vitamins to the correct deficiency symptoms.
9. Match minerals to the correct deficiency symptoms.
10. Write the purpose of feed additives.
11. Discuss the effects of feeding antibiotics.

ANIMAL NUTRIENTS
UNIT XI

SUGGESTED ACTIVITIES

I. Instructor:

   A. Provide student with objectives.

   B. Provide student with information sheet.

   C. Discuss unit and specific objectives.

   D. Discuss information sheet.

   E. Provide opportunity for student to look at a feed tag.

   F. Give test.

II. Student:

   A. Read objectives.

   B. Study information sheet and take notes.

   C. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

   A. Objectives

   B. Information sheet

   C. Test

   D. Answers to test

II. References:

   A. Cassard, Daniel W., and Elwood M. Juergenson. *Approved Practices in Feeds and Feeding.* Danville, Illinois: The Interstate Printers and Publishers, Inc., 1963.

   B. Morrison, Frank B. *Feeds and Feeding, Abridged*, 9th ed. Claremont, Ontario, Canada: Morrison Publishing Company, 1961.

C. *Instructional Materials for Vocational Agriculture II.* College Station, Texas: Teaching Materials Center, Agricultural Education Department, Texas A&M University.

D. *Nutrient Requirements for Beef Cattle,* 4th ed. National Academy of Sciences, 1970.

E. Bundy, Clarence E., and Ronald V. Diggins. *Livestock and Poultry Production.* Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1975.

ANIMAL NUTRIENTS
UNIT XI

INFORMATION SHEET

I. Terms and definitions

   A. Nutrient--Single class of foods or group of like foods that aid in the support of life

   B. Total digestible nutrient (TDN)--That portion of a nutrient which may be digested and taken into the animal body

   C. Feed additive--Powerful substance which is added in small amounts to feeds for promoting rapid growth, for more efficient feed utilization, and for disease treatment

   D. Protein--Nutrient which supplies building materials for body growth and repair

   E. Digestible protein--Amount of crude protein in a feed that can be digested by the animal

   F. Starch--Carbohydrate which supplies energy to animals

   G. Vitamin--Complex chemical essential for normal body functions

   H. Mineral--Element which is necessary for proper body functions and life processes

   I. Amino acid--Building block of protein

   J. Antibiotic--Substance used in small amounts to help prevent and control certain diseases in animals

   K. Urea--Synthetic protein substance used in ruminant rations

      (NOTE: A rule of thumb says that urea should make up not more than three percent of a grain mix for dairy cows; the beef cow should not get more than 1/4 pound of actual urea per day.)

   L. Essential amino acids--those that cannot be produced by the animal itself.

II. Major classes of nutrients

   A. Water

   B. Protein

   C. Carbohydrate

   D. Mineral

   E. Vitamin

   F. Fat

INFORMATION SHEET

III. Two types of protein

  A. Plant

    Examples: Soybean meal, cottonseed meal, linseed meal

  B. Animal

    Examples: Tankage, fish meal, meat scraps, dried milk products

IV. Functions of nutrients

  A. Water

    1. Transports nutrients and waste materials

    2. Regulates body temperature

  B. Protein

    1. Develops muscle tissue

    2. Repairs worn-out tissue

  C. Carbohydrate

    1. Supplies heat and energy

    2. Stores heat and energy

  D. Mineral

    1. Aids in skeletal development

    2. Provides chemical balance for proper body functions

  E. Vitamins

    1. Vitamin A

      a. Aids in disease resistance

      b. Aids in development of nerve cells

    2. Vitamin D--Aids in skeletal development (bones, teeth, etc.)

    3. Vitamin E--Is necessary for reproduction

    4. Vitamin K--Is necessary for blood clotting

INFORMATION SHEET

    5. Vitamin B
        a. Promotes growth
        b. Prevents skin infections
  F. Fat
    1. Provides source of energy
    2. Provides source of insulation

V. Major minerals

  A. Calcium (Ca)
  B. Phosphorus (P)
  C. Sodium chloride (NaCl)
  D. Potassium (K)
  E. Sulfur (S)

VI. Minor or trace minerals

  A. Iron (Fe)
  B. Copper (Cu)
  C. Zinc (Zn)
  D. Iodine (I)
  E. Cobalt (Co)
  F. Magnesium (Mg)

VII. Sources of nutrients

  A. Protein
    1. Cottonseed meal
    2. Linseed meal

INFORMATION SHEET

3. Soybean meal
4. Skim milk
5. Tankage
6. Alfalfa hay

B. Carbohydrate

1. Cereal grains

   Examples: Wheat, oats, barley, corn

2. Nonlegume roughage
3. Molasses

C. Fat

1. Tallow
2. Animal products
3. Seeds

D. Minerals (Found in almost all common livestock feeds and commercially prepared mineral and trace mineral mixes.)

1. Calcium - Good quality roughages
2. Phosphorus - High protein concentrate, steamed bone meal, and rock phosphate
3. Sodium chloride - Salt block
4. Potassium - Feed sources
5. Sulfur - Feed sources
6. Iron - Good roughage
7. Copper - Feed sources (use pre-mix)
8. Zinc - Feed sources (use pre-mix)
9. Iodine - Iodized salt
10. Cobalt - Cobalt supplement

INFORMATION SHEET

11. Magnesium - Magnesium sulphate

E. Vitamins (Found in most livestock feeds, produced in the rumen, and available in commercial vitamin premixes.)

    1. A - Alfalfa hay, dehydrated alfalfa meal, and fish oil
    2. B - Produced in the rumen (commercial sources)
    3. D - Sun cured hay of good quality
    4. K - Produced in the rumen (commercial sources)
    5. E - Good quality leafy alfalfa hay or green feed and cereal grains

VIII. Symptoms of vitamin deficiencies

A. Vitamin A

    1. Blindness
    2. Loss of young
    3. Poor development of bones
    4. Slow growth

B. Vitamin D

    1. Bone deformities
    2. Rickets

C. Vitamin E

    1. Loss of young
    2. Failure to reproduce

D. Vitamin K

    1. Internal bleeding
    2. Lung deformities resulting in death

E. Vitamin B complex

    1. Muscular weakness
    2. Abnormalitias of young

INFORMATION SHEET

IX. Symptoms of mineral deficiencies

A. Calcium

1. Rickets
2. Broken bones
3. Poor gains
4. Milk fever

B. Phosphorus

1. Lameness
2. Stiffness of joints
3. Less appetite
4. Reduced rate of gain
5. Decreased heat cycle

C. Sodium chloride

1. Lack of appetite
2. Unthrifty appearance

D. Potassium

1. Slow growth rate
2. Reduced feed consumption
3. Stiffness
4. Shock

E. Sulfur--Unthriftiness

F. Iron--Anemia

G. Iodine

1. Hairless pigs
2. Goiter

INFORMATION SHEET

H. Copper--Anemia

I. Cobalt

  1. Loss of appetite
  2. Unthriftiness
  3. Delayed sexual development

J. Manganese

  1. Reduced fertility
  2. Abortion
  3. Deformed young
  4. Enlarged joints
  5. Stiffness
  6. Twisted legs

X. Purpose of feed additives (growth stimulants)--Increase growth and feed efficiency

Examples: Stilbestrol, progesterone, testosterone, synovex, rumensin, MGA

XI. Effects of feeding antibiotics

Examples: Aureomycin, Terramycin, Penicillin, Streptomycin, Mecadox

A. Increased gains

B. Prevention and control of certain diseases

ANIMAL NUTRIENTS
UNIT XI

TEST

1. Match terms on the right to the correct definition.

_____a. Nutrient which supplies building materials for body growth and repair

_____b. Element which is necessary for proper body functions and life processes

_____c. Amount of crude protein in a feed that can be digested by the animal

_____d. Substance used in small amounts to help prevent and control certain diseases in animals

_____e. Carbohydrate which supplies energy to animals

_____f. Synthetic protein substance used in ruminant rations

_____g. That portion of a nutrient which may be digested and taken into the animal body

_____h. Building block of protein

_____i. Powerful substance which is added in small amounts to feeds for promoting rapid growth, for more efficient feed utilization, and for disease treatment

_____j. Single class of foods or group of like foods that aid in the support of life

_____k. Complex chemical essential for normal body functions

1. Nutrient
2. Total digestible nutrient (TDN)
3. Feed additive
4. Protein
5. Digestible protein
6. Starch
7. Vitamin
8. Mineral
9. Amino acid
10. Antibiotic
11. Urea

2. List the six major classes of nutrients.

a.

b.

c.

d.

e.

f.

3. Select from the list below two types of protein by placing an "X" in the blanks.

_____a. Old

_____b. Plant

_____c. New

_____d. Animal

_____e. Yellow

_____f. Supplement

_____g. Corn

4. Match the nutrients on the right to the correct functions.

_____a. Supplies heat and energy; stores heat and energy

_____b. Transports nutrients and waste materials; regulates body temperature

_____c. Aids in skeletal development; provides chemical balance for proper body functions

_____d. Provides source of energy; provides source of insulation

_____e. Develops muscle tissue; repairs worn-out tissue

1. Water
2. Protein
3. Carbohydrate
4. Mineral
5. Fat

5. Select from the list below the major minerals by placing an "X" in the blanks.

_____a. Calcium

_____b. Gold

_____c. Phosphorus

_____d. Sodium chloride

_____e. Silver

_____f. Sulfur

_____g. Argon

_____h. Helium

_____i. Potassium

_____j. Boron

_____k. Silica

_____l. Sugar

6. List three minor or trace minerals.

a.

b.

c.

7. Match the nutrients on the right to the proper source or sources. Nutrients may be used more than once.

_____a. Tallow

_____b. Seeds

_____c. Commercial vitamin premix

_____d. Cottonseed meal

_____e. Cereal grains

_____f. Skim milk

_____g. Animal products

_____h. Soybean meal

_____i. Nonlegume roughage

_____j. Commercially prepared mineral and trace mineral mix

_____k. Tankage

_____l. Molasses

_____m. Alfalfa hay

1. Protein
2. Carbohydrate
3. Fat
4. Mineral
5. Vitamin

8. Match the vitamins on the right to the correct deficiency symptom.

_____a. Internal bleeding; lung deformities resulting in death

_____b. Blindness; loss of young; poor development of bones; slow growth

_____c. Loss of young; failure to reproduce

_____d. Muscle weakness; abnormalities of young

_____e. Bone deformities; rickets

1. Vitamin A
2. Vitamin B complex
3. Vitamin D
4. Vitamin E
5. Vitamin K

9. Match the minerals on the right to the correct deficiency symptom.

_____a. Lameness; stiffness of joints; less appetite; reduces rate of gain, decreased heat cycle

_____b. Loss of appetite; unthriftiness; delayed sexual development

_____c. Slow growth rate; reduced feed consumption; stiffness; shock

_____d. Hairless pigs; goiter

_____e. Anemia

_____f. Rickets; broken bones; poor gains; milk fever

1. Calcium
2. Phosphorus
3. Potassium
4. Iron
5. Iodine
6. Cobalt

10. Write the purpose of feed additives.

11. Discuss the effects of feeding antibiotics.

ANIMAL NUTRIENTS
UNIT XI

ANSWERS TO TEST

1. a. 4
   b. 8
   c. 5
   d. 10
   e. 6
   f. 11
   g. 2
   h. 9
   i. 3
   j. 1
   k. 7
2. a. Water
   b. Protein
   c. Carbohydrate
   d. Mineral
   e. Vitamin
   f. Fat
3. b, d
4. a. 3
   b. 1
   c. 4
   d. 5
   e. 2
5. a, c, d, f, i
6. Any three of the following:
   a. Iron
   b. Copper
   c. Zinc
   d. Iodine
   e. Cobalt
   f. Magnesium

7. a. 3
   b. 3
   c. 5
   d. 1
   e. 2
   f. 1
   g. 3
   h. 1
   i. 2
   j. 4
   k. 1
   l. 2
   m. 1

8. a. 5
   b. 1
   c. 4
   d. 2
   e. 3

9. a. 2
   b. 6
   c. 3
   d. 5
   e. 4
   f. 1

10. Increase growth and feed efficiency

11. Discussion should include:
   a. Increased gains
   b. Prevention and control of certain diseases

WHOLESALE CUTS AND GRADES OF BEEF, PORK, AND LAMB
UNIT XII

UNIT OBJECTIVE

After completion of this unit, the student should be able to match terms associated with wholesale cuts and grades of beef, pork, and lamb to the proper definition. The student should be able to identify, by labeling, the wholesale cuts of beef, pork, and lamb. The student should be able to distinguish between the different grades for beef, pork, and lamb, and should also be able to compute yield grade for beef and lamb. This knowledge will be evidenced by scoring eighty-five percent on the unit test.

Specific Objectives

After the completion of this unit, the student should be able to:

1. Match seven terms associated with the wholesale cuts and carcass evaluation of beef, pork, and lamb carcasses to the correct definitions.
2. Identify the wholesale cuts of beef from a drawing.
3. Match the degrees of marbling with the examples.
4. List the quality grades of beef.
5. Describe what beef quality grades are based on.
6. Demonstrate the ability to compute beef cattle yield grades.
7. Identify the wholesale cuts of pork from a drawing.
8. List the quality grades of pork.
9. Demonstrate the ability to determine U.S.D.A. pork grades.
10. Identify the wholesale cuts of lamb from a drawing.
11. Rank in order of importance the quality grades for lamb.
12. Demonstrate the ability to compute lamb yield grades.
13. Write the average dressing percentages for beef, pork, and lamb.

WHOLESALE CUTS AND GRADES OF BEEF, PORK, AND LAMB
UNIT XII

SUGGESTED ACTIVITIES

I. Instructor:

   A. Provide students with objective sheet.

   B. Provide students with information sheets.

   C. Make transparencies.

   D. Discuss unit and specific objectives.

   E. Discuss information sheets.

   F. Plan a field trip to a slaughter plant or wholesale meat plant.

   G. Give test.

II. Students:

   A. Read objective sheet.

   B. Study information sheet.

   C. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

   A. Objectives

   B. Information sheets

   C. Transparency masters

      TM 1 - Wholesale cuts of beef

      TM 1 - Wholesale cuts of beef

      TM 2 - Degrees of marbling

      TM 3 - Wholesale cuts of pork

      TM 4 - Wholesale cuts of lamb

D. Test

E. Answers to test

II. References:

A. *The Meat We Eat*, Ziegler, Thomas P., The Interstate Printers and Publishers, Danville, Illinois, 1962.

B. *Cuts of Meat - How You Can Identify Them*, Swift and Company, Agriculture Research Department, Chicago, Illinois.

C. *Meat Evaluation Handbook*, National Livestock and Meat Board, Chicago, Illinois, 1969.

D. *Procedures To Evaluate Market Hogs*, National Pork Producers Council, 4715 Grand, Des Moines, Iowa 50312

E. *U.S.D.A. Field Grades For Lamb*, U.S.D.A. Marketing Bulletin No. 52, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

F. *U.S.D.A. Grades for Pork Carcasses*, U.S.D.A. Marketing Bulletin No. 49, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

G. *U.S.D.A. Yield Grades For Beef*, U.S.D.A. Marketing Bulletin No. 45, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

H. *U.S.D.A. Grades for Slaughter Swine and Feeder Pigs*, U.S.D.A. Marketing Bulletin No. 51, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

WHOLESALE CUTS AND GRADES OF BEEF, PORK, AND LAMB
UNIT XII

INFORMATION SHEET

I. Terms and Definitions:

A. Wholesale cuts - the parts at which the carcass is separated for selling purposes.

B. Retail cuts - those cuts of meat sold directly to the consumer market.

C. Carcass - the dressed, slaughtered animal containing two "sides"--two forequarters and two hindquarters.

D. Bone - item used in determining the age of a beef carcass as evidenced by the youthfulness or maturity as indicated by the chine bones.

E. Chine bones - extensions of the thorasiac vertebrae, with cartilage appendages, which determine the age of the carcass. A is the youngest, E the oldest.
(NOTE: a pearly white cartilage and a white porous chine indicate youthfulness, while a red cartilage and red bone indicate maturity.)

F. Ossification - hardening of the cartilage which indicates maturity.

G. Marbling - flecks or streaks of intramuscular fat throughout the lean which denotes tenderness. It enhances palatability by increasing juiciness and flavor.

H. Dressing percentage - the weight of the hot carcass as compared to the live weight of the animal.

I. Grade - measure of a carcass's degree of excellence based on conformation, finish, quailty.

J. Conformation - refers to the general build, form, shape, contour, or outline of the carcass.

K. Finish - refers to the amount, quality and distribution of fat.

L. Quality - refers to the eating quality of the meat as indicated by characteristics of fat and lean tissue, bone and marbling.

M. Quality Grade - each grade name is associated with a specific degree of quality. This enables consumers to utilize meat most efficiently by preparing it in the manner for which it is best suited.

N. Feathering - the internal fat deposited between the ribs on the internal carcass. An abundance of feathering indicates an abundance of marbling.

O. Cutability - the proportion of the carcass that is salable as trimmed retail cuts

P. Yield Grade - a uniform method of identifying carcasses for differences in cutability or yield of boneless, closely-trimmed retail cuts from the round, loin, rib, and chuck.

INFORMATION SHEET

II. Beef (Bovine)

A. Wholesale Cuts of Beef (Transparency 1)

1. Forequarter:
    a. Chuck - 25% of the carcass
    b. Brisket - 4% of the carcass
    c. Foreshank - 3% of the carcass
    d. Plate - 7% of the carcass
    e. Rib - 9% of the carcass
    (NOTE: Beef have a dressing percentage of 55%)

2. Hindquarter
    a. Loin - 19% of the carcass
    b. Round - 20% of the carcass
    c. Rump - 4% of the carcass
    d. Hind Shank - 2% of the carcass
    e. Flank - 5% of the carcass

3. Variety Cuts:
    a. Kidney
    b. Heart 2% of the carcass
    c. Tongue
    d. Liver

B. Degrees of Marbling (Transparency 2)

1. Very abundant
2. Abundant
3. Moderately abundant
4. Slightly abundant
5. Moderate
6. Modest
7. Small
8. Slight
9. Traces

C. Quality Grades for Beef:

1. The quality grades for beef are:
    a. Prime
    b. Choice
    c. Good
    d. Standard
    e. Utility
    f. Commercial
    g. Cutter
    h. Canner
    (NOTE: Quality grades are determined by three subjectively scored factors: conformation score, maturity score, and marbling score)

INFORMATION SHEET

2. Grading Chart for Beef

Grade	Maturity	Marbling
Prime	A&B	Very abundant and abundant
Choice	A&B	Abundant, moderate, modest, small
Good	A&B	Small, slight, traces
Standard	A&B	Traces, practically devoid
Commercial	C, D, & E	Abundant, moderate, modest, small
Utility	Young or Mature Carcasses	Small, slight, moderate, modest, traces
Cutter*	C, D, & E	Slight, traces, devoid
Canner*	C, D, & E	Devoid

*Cutter and canner are ordinarily used in processed meat products and are rarely, if ever, sold as retail cuts.

D. Steps for Determining Yield Grades for Beef

U.S.D.A. Beef Cattle Yield Grades (Y.G.)

Step 1. Determine Preliminary Yield Grade

Fat Thickness (in.)	Preliminary Y.G.
.00	2.00
.05	2.13
.10	2.25
.15	2.38
.20	2.50
.25	2.63
.30	2.75
.35	2.88
.40	3.00
.45	3.13
.50	3.25
.55	3.38
.60	3.50
.65	3.63
.70	3.75
.75	3.88
.80	4.00
.85	4.13
.90	4.25
.95	4.38
1.00	4.50
1.05	4.63

INFORMATION SHEET

Step 1 – Continued

Fat Thickness (in.)	Preliminary Y.G.
1.10	4.75
1.15	4.88
1.20	5.00
1.25	5.13
1.30	5.25
1.35	5.38
1.40	5.50
1.45	5.63
1.50	5.75
1.55	5.88

Step 2. Adjustment for Rib-Eye-Area (R.E.A.)

Hot Carcass Wt. (lb.)	R.E.A. (sq. in.)
500	9.8
525	10.1
550	10.4
575	10.7
600	11.0
625	11.3
650	11.6
675	11.9
700	12.2
725	12.5
750	12.8
775	13.1
800	13.4
825	13.7
850	14.0
875	14.3
900	14.6

a. For each sq. in. more R.E.A. than shown in the above table, subtract .3 from the preliminary Y.G.

b. For each sq. in. less R.E.A. than shown in the above table, add .3 to the preliminary Y.G.

Step 3. Adjustment for % Kidney, Pelvic and Heart Fat (% KPH Fat)

a. For each % KPH fat more than 3.5%, add .20 to the adjusted Y.G. found in Step 2.

INFORMATION SHEET

b. For each % KPH fat less than 3.5%, subtract .20 from the adjusted Y.G. found in Step 2.

THE FINAL YIELD GRADE HAS BEEN DETERMINED.

Step 4. Round the Final Yield Grade down to the nearest .1
Example:
2.73 = 2.7
2.78 = 2.7

This information available along with other yield grade information in pocket card form from: Keith Gilster, Animal Science Department, Marvel Baker Hall, Institute of Agriculture and Natural Resources, University of Nebraska, Lincoln, Nebraska 68583

III. Pork

A. Wholesale cuts of Pork (Transparency 3)

1. Ham - 19% of the carcass
2. Loin - 15% of the carcass
3. Side - 17.5% of the carcass
4. Picnic shoulder - 8.5% of the carcass
5. Boston butt - 6.5% of the carcass
6. Jowl - 3% of the carcass

(NOTE: Swine have a dressing percentage range of 72-75%)

B. Quality Grades for Pork:

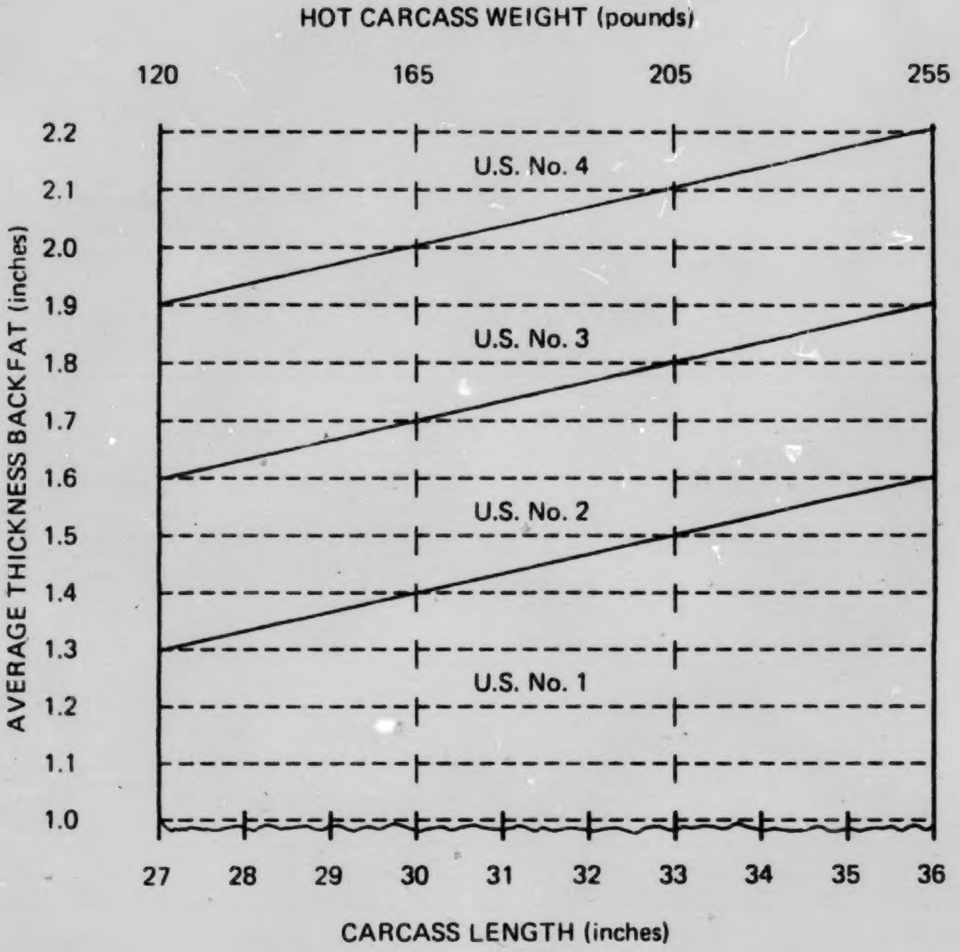
1. Quality grades are based on:
    a. Carcass length
    b. Average backfat thickness
    c. Degree of muscling
        (1) degrees of muscling include:
            (a) very thick
            (b) thick
            (c) moderately thick
            (d) slightly thin
            (e) thin

2. The U.S.D.A. pork grades include:

Grade	Percent of Lean Cuts
a. U.S. No. 1	53% or more
b. U.S. No. 2	50-52.9%
c. U.S. No. 3	47-49.9%
d. U.S. No. 4	Less than 47%
e. Utility (thin bellies, or soft, oily carcasses)	

INFORMATION SHEET

C. Steps for Determining U.S.D.A. Pork Grades



Step 1. Use carcass length and backfat to locate the preliminary grade on the graph. Hot carcass weight can be used instead of carcass length; however, if the grade would differ, the grade found by using carcass length as part of the determination would be the official.

Step 2. Adjustment for Muscling Score. The muscling scores are Very Thick, Thick, Moderately Thick, Slightly Thin, Thin and Very Thin. The typical muscling scores for pork carcasses are: U.S. No. 1 (Thick), U.S. No. 2 (Moderately Thick), U.S. No. 3 (Slightly Thin) and U.S. No. 4 (Thin).

a. For each full muscling score more than that considered as typical for the preliminary grade, adjust favorably the preliminary grade the equivalent of .1 in. average backfat.

INFORMATION SHEET

b. For each full muscling score less than that considered as typical for the preliminary grade, adjust unfavorably the preliminary grade the equivalent of .1 in. average backfat. In only the U.S. No. 1 grade, this type of compensation is limited to one full inferior muscling score. A pig or carcass with less than moderately thick muscling would not be eligible for the U.S. No. 1 grade.

c. A preliminary grade can not be adjusted more than one grade in either direction.

Example Adjustment For Muscling Score

Length (in.)	Backfat (in.)	Muscling Score	U.S.D.A. Grade
30.0	1.35	Very Thick	1o
30.0	1.35	Thick (Typical of U.S. No. 1 Grade)	1–
30.0	1.35	Moderately Thick	2+
30.0	1.35	Slightly Thin	2o

THE FINAL GRADE HAS BEEN DETERMINED

Step 3. Report the final grade to 1/3 of a grade.

Example:
Best U.S. 1 = 1+
Average U.S. 1 = 1o
Lowest U.S. 1 = 1–

IV. Lamb

A. Wholesale Cuts of Lamb (Transparency 4)

1. Hind saddle:
   a. Leg - 33% of the carcass
   b. Loin - 14% of the carcass
   c. Flank - 3% of the carcass

2. Fore saddle
   a. Rack - 11% of the carcass
   b. Square cut shoulder - 25% of the carcass
   c. Breast - 14% of the carcass
   (NOTE: the fore and hind saddle are separated between the 12th and 13th ribs. Lamb has an average dressing percentage of 45-48%.)

B. Quality Grades for Lamb

1. The quality grades for lamb, much like those for beef, are based on:

INFORMATION SHEET

- a. Fat deposition (lean between ribs, firmness of fat to legs).
- b. Conformation (proportion of edible meat to bone and proportion of carcass weight in the demanded cuts)
- c. Maturity (maturity is determined by break-joint)

2. The U.S.D.A. lamb grades include:
   - a. Prime
   - b. Choice
   - c. Good
   - d. Utility
   - e. Cull

3. Grading Chart for Lamb:

Grade	Maturity	Fat Deposition		Average Weight
		Feathering	Flank	
Prime	A	Modest	Small	48 pounds
Choice	A–	Slight	Traces	45 pounds
Good	B–	Traces	Practically none	41 pounds
Utility	B–	Practically none	None	30 pounds
Cull	––	––	––	––

C. Steps for Determining U.S.D.A. Lamb Yield Grade

U.S.D.A. Lamb Yield Grades (Y.G.)

Step 1. Determine Preliminary Yield Grade

Fat Thickness (in.)	Preliminary Y.G.
.00	2.00
.05	2.33
.10	2.67
.15	3.00
.20	3.33
.25	3.67
.30	4.00
.35	4.33
.40	4.67
.45	5.00
.50	5.33
.55	5.67

INFORMATION SHEET

Step 2. Adjustment For Leg Score

a. For each leg score above 11, subtract .05 from the preliminary Y.G.

b. For each leg score less than 11, add .05 to the preliminary Y.G.

Leg Scores

P+ = 15
Po = 14
P– = 13

C+ = 12
Co = 11
C– = 10

G+ = 9
Go = 8
G– = 7

U+ = 6
Uo = 5
U– = 4

C+ = 3
Co = 2
C– = 1

Step 3. Adjustment for % Kidney and Pelvic Fat (F KP Fat)

a. For each % KP Fat more than 3.5%, add .25 to the adjusted Y.G. found in Step 2.

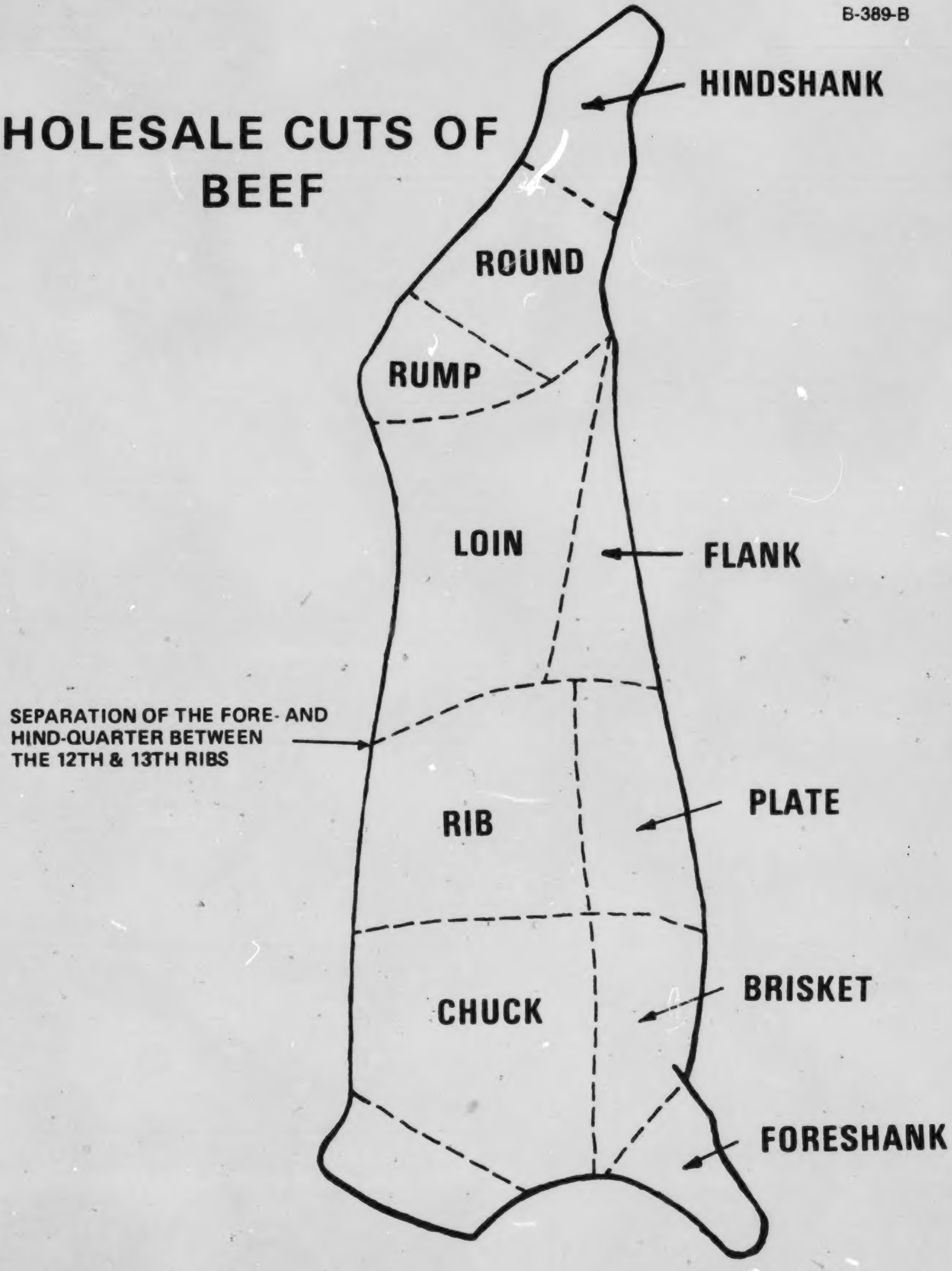
b. For each % KP Fat less than 3.5%, subtract .25 from the adjusted Y.G. found in Step 2.

THE FINAL YIELD GRADE HAS BEEN DETERMINED

Step 4. Round the Final Yield Grade down to the nearest .1

Example:
3.33 = 3.3
3.38 = 3.3

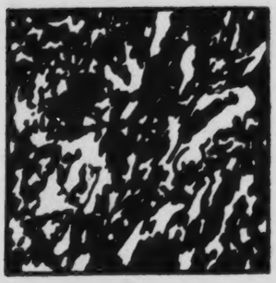
WHOLESALE CUTS OF BEEF


HINDSHANK
ROUND
RUMP
LOIN
FLANK
SEPARATION OF THE FORE- AND HIND-QUARTER BETWEEN THE 12TH & 13TH RIBS
RIB
PLATE
CHUCK
BRISKET
FORESHANK

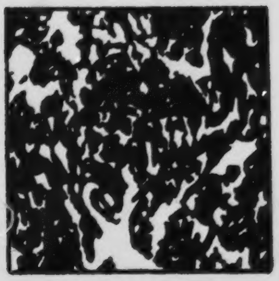
TM 1

Illustrations of Marbling

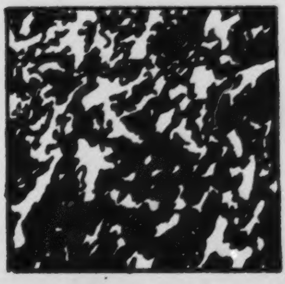
Since marbling is such an important factor in judging and grading beef, the following pictures illustrate the lower limits of eight of the degrees of marbling (abundant through traces) referred to in the official United States Standards for Grades of Carcass Beef. In grading, positive consideration is given to marbling through the upper limit of "abundant." That amount is depicted by the illustration of the lower limit of "very abundant." The lowest degree of marbling, "practically devoid" is not illustrated.



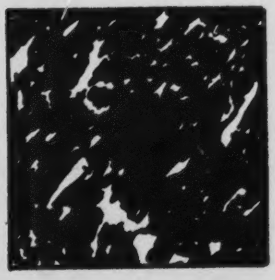
1 - Very Abundant



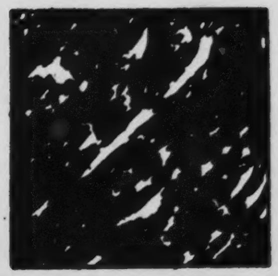
2 - Abundant



3 - Moderately Abundant

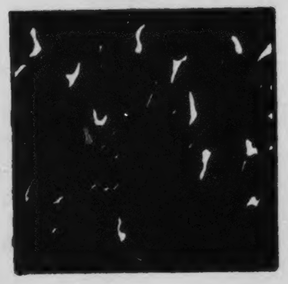


4 - Slightly Abundant

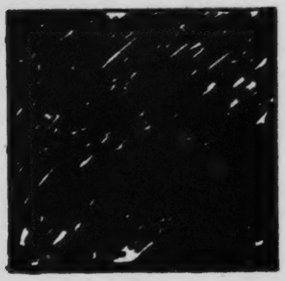


5 - Moderate

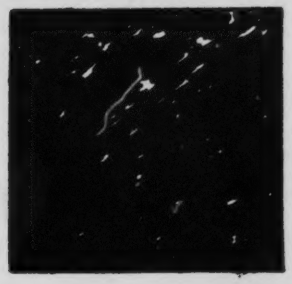
6 - Modest



7 - Small



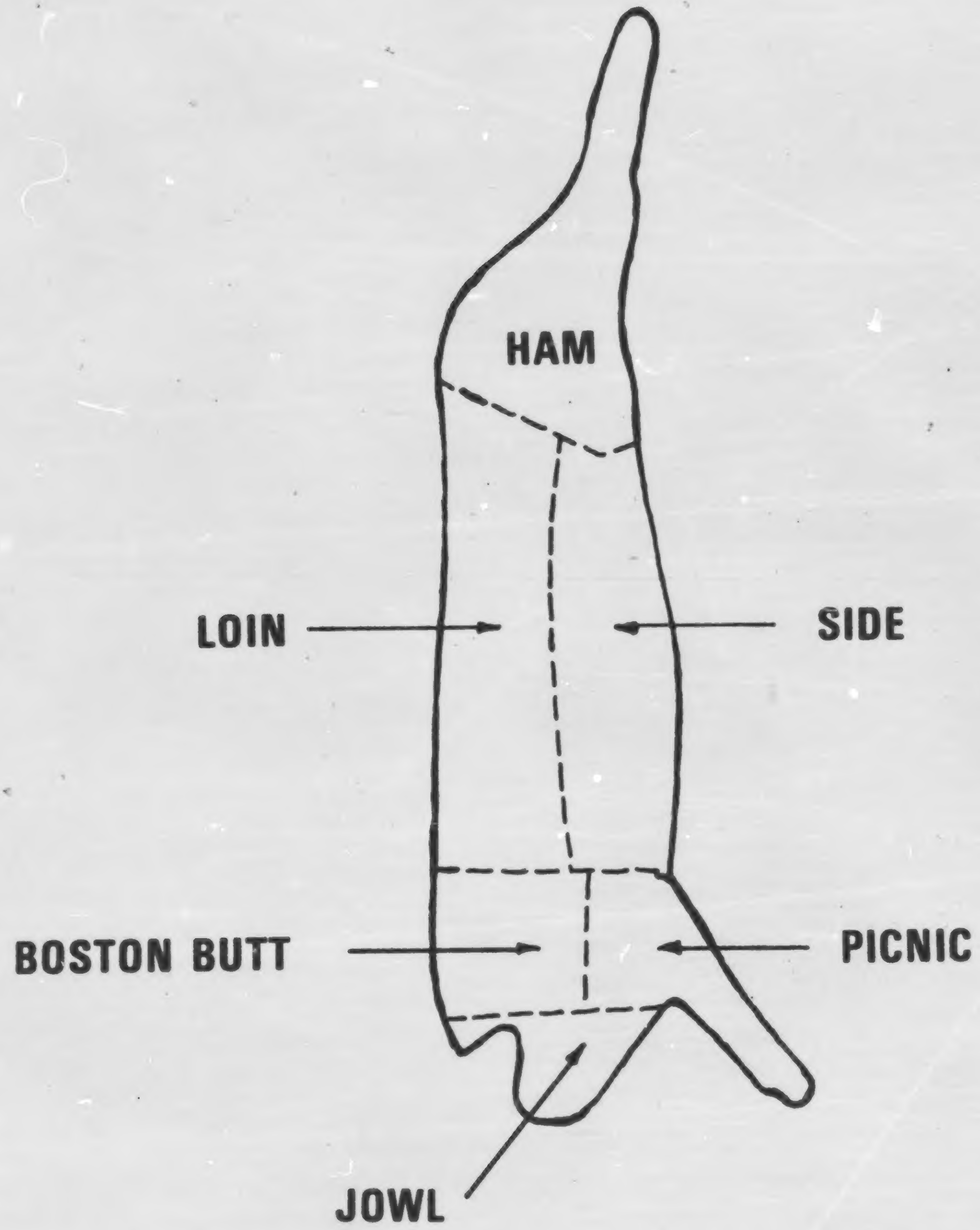
8 - Slight



9 - Traces

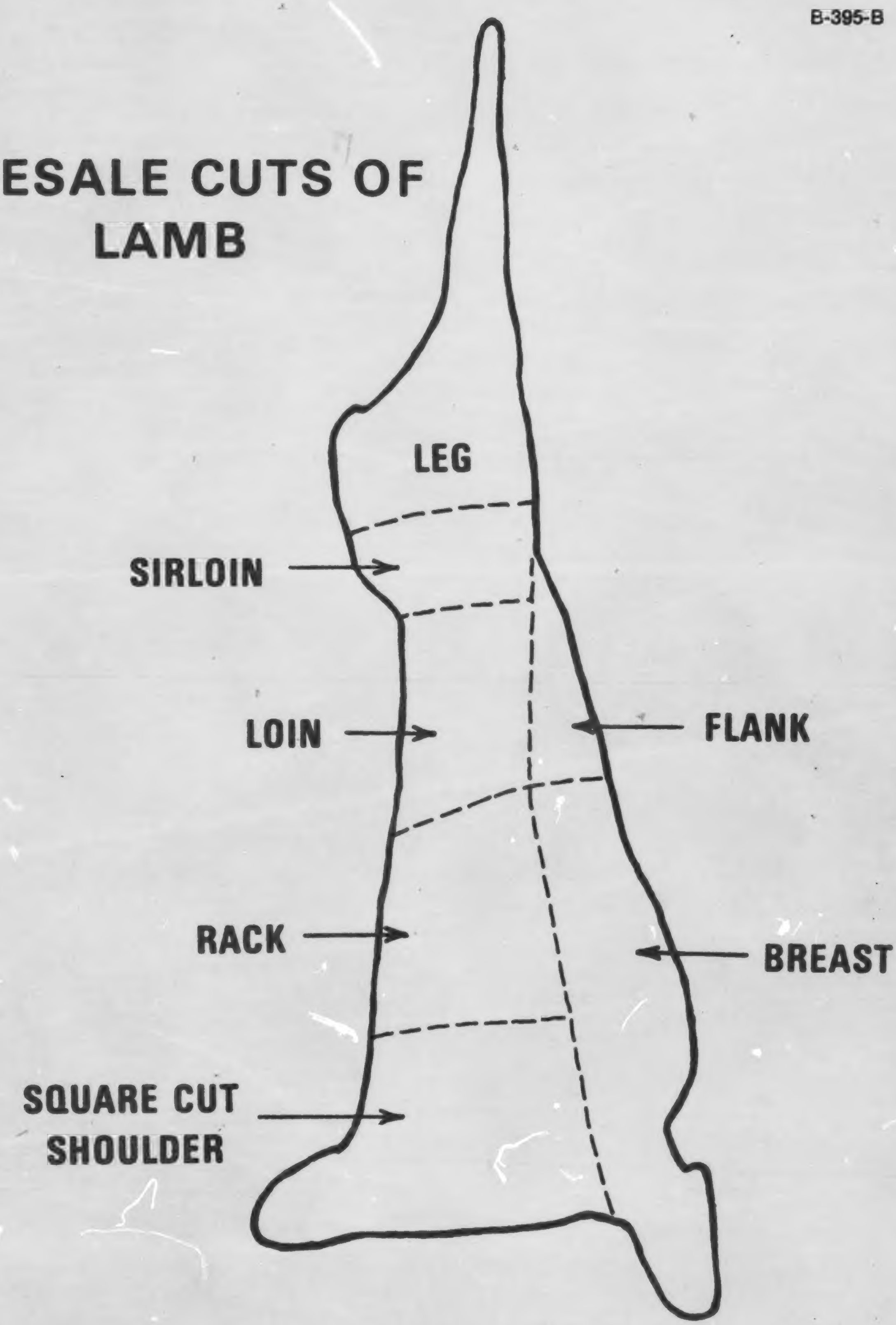
B-393-B

WHOLESALE CUTS OF PORK


HAM
LOIN
SIDE
BOSTON BUTT
PICNIC
JOWL

B-395-B

WHOLESALE CUTS OF LAMB


LEG
SIRLOIN
LOIN
FLANK
RACK
BREAST
SQUARE CUT SHOULDER

WHOLESALE CUTS AND GRADES OF BEEF, PORK, AND LAMB
UNIT XII

ASSIGNMENT SHEET NO. 1--CALCULATING YIELD GRADE

1. Compute yield grade for the following beef animal using the chart given below:

   Hot carcass weight – 800 lbs.

   Ribeye area (sq. in.) – 14.4 sq. in.

   Kidney, heart, and pelvic fat – 3.0%

   Fat thickness – .4 in.

U.S.D.A. Beef Cattle Yield Grades (Y.G.)

Step 1. Determine Preliminary Yield Grade

Fat Thickness (in.)	Preliminary Y.G.
.00	2.00
.05	2.13
.10	2.25
.15	2.38
.20	2.50
.25	2.63
.30	2.75
.35	2.88
.40	3.00
.45	3.13
.50	3.25
.55	3.38
.60	3.50
.65	3.63
.70	3.75
.75	3.88
.80	4.00
.85	4.13
.90	4.25
.95	4.38
1.00	4.50
1.05	4.63
1.10	4.75
1.15	4.88
1.20	5.00
1.25	5.13
1.30	5.25
1.35	5.38
1.40	5.50
1.45	5.63
1.50	5.75
1.55	5.88

Step 2. Adjustment For Rib-Eye-Area (R.E.A.)

Hot Carcass Wt. (lb.)	R.E.A. (sq. in.)
500	9.8
525	10.1
550	10.4
575	10.7
600	11.0
625	11.3
650	11.6
675	11.9
700	12.2
725	12.5
750	12.8
775	13.1
800	13.4
825	13.7
850	14.0
875	14.3
900	14.6

a. For each sq. in. more R.E.A. than shown in the above table, subtract .3 from the preliminary Y.G.

b. For each sq. in. less R.E.A. than shown in the above table, add .3 to the preliminary Y.G.

Step 3. Adjustment for % Kidney, Pelvic and Heart Fat (% KPH Fat)

a. For each % KPH fat more than 3.5%, add .20 to the adjusted Y.G. found in Step 2.

b. For each % KPH fat less than 3.5%, subtract .20 from the adjusted Y.G. found in Step 2.

THE FINAL YIELD GRADE HAS BEEN DETERMINED

Step 4. Round the Final Yield Grade down to the nearest .1

Example

2.73 = 2.7

2.78 = 2.7

WHOLESALE CUTS AND GRADES OF BEEF, PORK, AND LAMB
UNIT XII

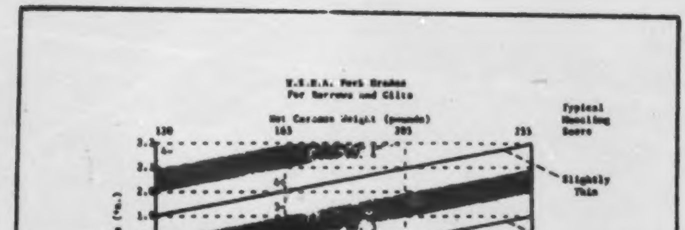
ASSIGNMENT SHEET NO. 2--CALCULATING YIELD GRADE

1. Compute the percent of lean pork for the following pork carcass using the chart given below:

    Carcass length – 32 in.

    Backfat – 1.3 in.

    Muscling score – Thick



Step 1. Use carcass length and backfat to locate the preliminary grade on the graph. Hot carcass weight can be used instead of carcass length; however, if the grade would differ, the grade found by using carcass length as part of the determination would be the official.

Step 2. Adjustment for Muscling Score. The muscling scores are Very Thick, Thick, Moderately Thick, Slightly Thin, Thin and Very Thin. The typical muscling scores for pork carcasses are: U.S. No. 1 (Thick), U.S. No. 2 (Moderately Thick), U.S. No. 3 (Slightly Thin) and U.S. No. 4 (Thin).

a. For each full muscling score more than that considered as typical for the preliminary grade, adjust favorably the preliminary grade the equivalent of .1 in. average backfat.

b. For each full muscling score less than that considered as typical for the preliminary grade, adjust unfavorably the preliminary grade the equivalent of .1 in. average backfat. In only the U.S. No. 1 grade, this type of compensation is limited to one full inferior muscling score. A pig or carcass with less than moderately thick muscling would not be eligible for the U.S. No. 1 grade.

c. A preliminary grade can not be adjusted more than one grade in either direction.

Example Adjustment for Muscling Score

Length (in.)	Backfat (in.)	Muscling Score	USDA Grade
30.0	1.35	Very Thick	1+
30.0	1.35	Thick (Typical of U.S. No. 1 Grade)	1-
30.0	1.35	Moderately Thick	2+
30.0	1.35	Slightly Thin	2+

THE FINAL GRADE HAS BEEN DETERMINED

Step 3. Report the final grade to 1/3 of a grade.

Example

Best U.S. 1 = 1+
Average U.S. 1 = 1o
Lowest U.S. 1 = 1-

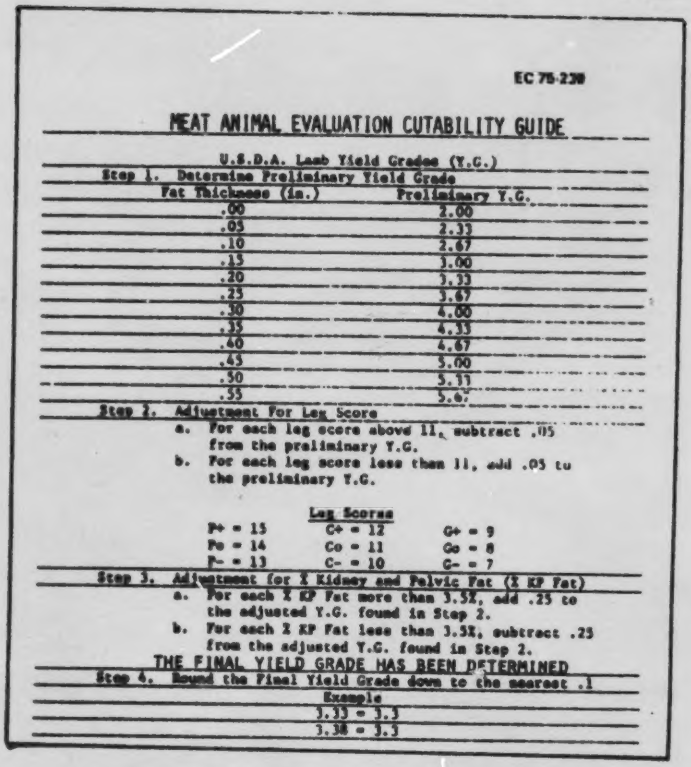
WHOLESALE CUTS AND GRADES OF BEEF, PORK, AND LAMB
UNIT XII

ASSIGNMENT SHEET NO. 3--CALCULATING YIELD GRADE FOR LAMB CARCASSES USING THE CHART GIVEN BELOW:

Fat Thickness over loin (in.) — .10 in.

Leg Confirmation score — 13

Kidney, heart, and pelvic fat (%) — 2.5%



EC 75-230

MEAT ANIMAL EVALUATION CUTABILITY GUIDE

U.S.D.A. Lamb Yield Grades (Y.G.)

Step 1. Determine Preliminary Yield Grade

Fat Thickness (in.)	Preliminary Y.G.
.00	2.00
.05	2.33
.10	2.67
.15	3.00
.20	3.33
.25	3.67
.30	4.00
.35	4.33
.40	4.67
.45	5.00
.50	5.33
.55	5.67

Step 2. Adjustment For Leg Score

a. For each leg score above 11, subtract .05 from the preliminary Y.G.

b. For each leg score less than 11, add .05 to the preliminary Y.G.

Leg Scores

P+ = 15	C+ = 12	G+ = 9
Po = 14	Co = 11	Go = 8
P- = 13	C- = 10	G- = 7

Step 3. Adjustment for % Kidney and Pelvic Fat (% KP Fat)

a. For each % KP Fat more than 3.5%, add .25 to the adjusted Y.G. found in Step 2.

b. For each % KP Fat less than 3.5%, subtract .25 from the adjusted Y.G. found in Step 2.

THE FINAL YIELD GRADE HAS BEEN DETERMINED

Step 4. Round the Final Yield Grade down to the nearest .1

Example

3.33 = 3.3

3.38 = 3.3

WHOLESALE CUTS AND GRADES OF BEEF, PORK, AND LAMB
UNIT XII

ANSWERS TO ASSIGNMENT SHEETS

A. Assignment Sheet No. 1

$$\begin{array}{r} 3.00 \\ -.3 \\ -.10 \\ \hline 2.60 \end{array} \qquad 12.8 \qquad \begin{array}{r} 3.50 \\ -.45 \\ 0 \\ \hline 3.05 \end{array}$$

B. Assignment Sheet No. 2

U.S. No. 1o

C. Assignment Sheet No. 3

$$\begin{array}{r} 2.67 \\ -.10 \\ -.25 \\ \hline 2.32 \end{array}$$

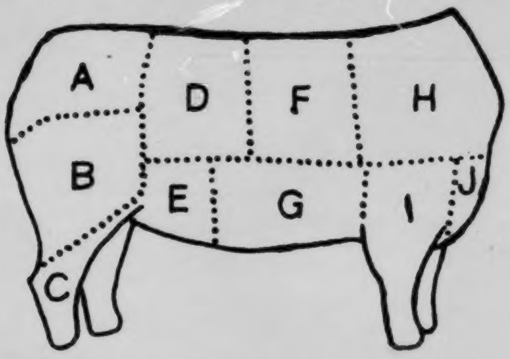
WHOLESALE CUTS AND GRADES OF BEEF, PORK, AND LAMB
UNIT XII
TEST

1. Match the terms on the right with the correct definitions.

___ A. Wholesale cuts
___ B. Marbling
___ C. Grade
___ D. Finish
___ E. Quality
___ F. Feathering
___ G. Cutability

1. Measure of carcass's degree of excellence based on conformation, finish, quality.
2. Refers to the amount, quality and distribution of fat.
3. The parts at which the carcass is separated for selling purposes.
4. Refers to the eating quality of the meat as indicated by characteristics of the fat and lean tissue, bone and marbling.
5. The portion of the carcass that is salable as trimmed retail cuts.
6. The internal fat deposited between the ribs on the internal carcass. An abundance of feathering indicates an abundance of marbling.
7. Flecks or streaks of intramuscular fat throughout the lean which denotes tenderness.

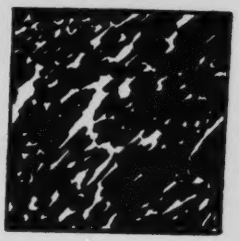
2. Label the drawing below indicating the wholesale cuts of beef:

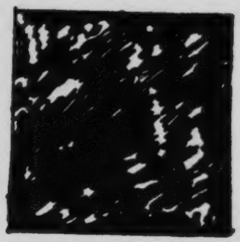


A. ____________
B. ____________
C. ____________
D. ____________
E. ____________
F. ____________
G. ____________
H. ____________
I. ____________
J. ____________

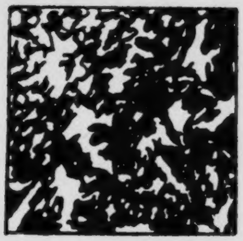
3. Match the degrees of marbling with the examples below:

___ A. Traces
___ B. Slight
___ C. Small
___ D. Modest
___ E. Moderate
___ F. Slightly Abundant
___ G. Moderately Abundant
___ H. Abundant
___ I. Very Abundant


1


2

3



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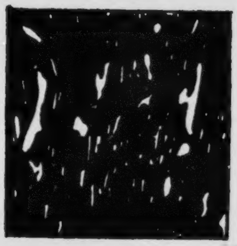
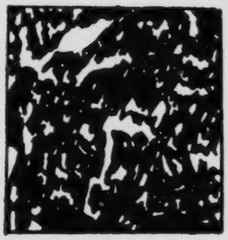


5

6

7



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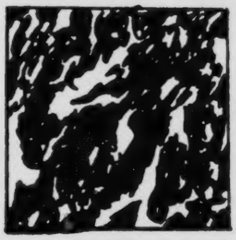


9

4. List the quality grades for beef:

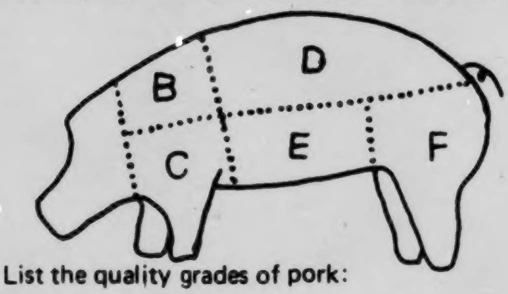
A.
B.
C.
D.
E.
F.
G.
H.

5. What are quality grades of beef based on?

6. Calculate the yield grade for the following beef animal using the meat animal evaluation cutability guide provided.

Hot carcass weight – 600 lbs.
Ribeye area (sq. in.) – 12.2 sq. in.
Kidney, heart, and pelvic fat – 3.0 %
Adjusted fat thickness – .4 in.

7. Identify the wholesale cuts of pork from the drawing below:



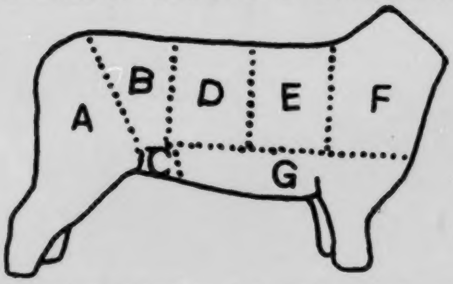
A. ______________________
B. ______________________
C. ______________________
D. ______________________
E. ______________________
F. ______________________

8. List the quality grades of pork:

A.
B.
C.
D.
E.

9. Calculate the percent of lean pork on the following pork carcass using the meat animal evaluation cutability guide provided.
Carcass length – 31 in.
Backfat – 1.5 in.
Muscling score – Moderately Thick

10. Identify the wholesale cuts of lamb from the drawing below:



A. ______________________
B. ______________________
C. ______________________
D. ______________________
E. ______________________
F. ______________________
G. ______________________

11. Place the lamb market grades below in order from best to least best.

A.	Choice	A.
B.	Utility	B.
C.	Prime	C.
D.	Good	D.

12. Calculate the yield grade on the following lamb carcass using the meat animal evaluation cutability guide provided.
    Fat thickness over loin (in.) – .05 in.
    Leg conformation score – 12
    Kidney, heart, and pelvic fat (%) – 1.5%

13. Give the average dressing percentages for the animals listed below:

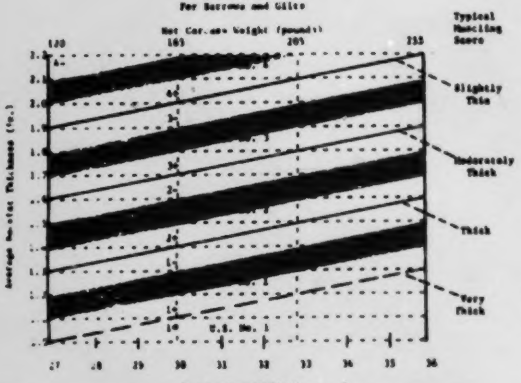
    A. Beef ________ %
    B. Pork ________ %
    C. Lamb ________ %

U.S.D.A. Beef Cattle Yield Grades (Y.G.)

Step 1. Determine Preliminary Yield Grade

Fat Thickness (in.)	Preliminary Y.G.
.00	2.00
.05	2.13
.10	2.25
.15	2.38
.20	2.50
.25	2.63
.30	2.75
.35	2.88
.40	3.00
.45	3.13
.50	3.25
.55	3.38
.60	3.50
.65	3.63
.70	3.75
.75	3.88
.80	4.00
.85	4.13
.90	4.25
.95	4.38
1.00	4.50
1.05	4.63
1.10	4.75
1.15	4.88
1.20	5.00
1.25	5.13
1.30	5.25
1.35	5.38
1.40	5.50
1.45	5.63
1.50	5.75
1.55	5.88

U.S.D.A. Pork Grades For Barrows and Gilts



Step 1. Use carcass length and backfat to locate the preliminary grade on the graph. Hot carcass weight can be used instead of carcass length; however, if the grade would differ, the grade found by using carcass length as part of the determination would be the official.

Step 2. Adjustment For Muscling Score. The muscling scores are Very Thick, Thick, Moderately Thick, Slightly Thin, Thin and Very Thin. The typical muscling scores for pork carcasses are: U.S. No. 1 (Thick), U.S. No. 2 (Moderately Thick), U.S. No. 3 (Slightly Thin) and U.S. No. 4 (Thin).

a. For each full muscling score more than that considered as typical for the preliminary grade, adjust favorably the preliminary grade the equivalent of .1 in. average backfat.

b. For each full muscling score less than that considered as typical for the preliminary grade, adjust unfavorably the preliminary grade the equivalent of .1 in. average backfat. In only the U.S. No. 1 grade, this type of compensation is limited to one full inferior muscling score. A pig or carcass with less than moderately thick muscling would not be eligible for the U.S. No. 1 grade.

c. A preliminary grade can not be adjusted more than one grade in either direction.

Example Adjustment For Muscling Score

Length (in.)	Backfat (in.)	Muscling Score	USDA Grade
30.0	1.35	Very Thick	1o
30.0	1.35	Thick (Typical of U.S. No. 1 Grade)	1-
[illegible]	1.35	Moderately Thick	2+
[illegible]	1.35	Slightly Thin	2o

THE FINAL GRADE HAS BEEN DETERMINED

Step 3. Report the final grade to 1/3 of a grade.

Example

Best U.S. 1 = 1+
Average U.S. 1 = 1o
Lowest U.S. 1 = 1-

Step 2. Adjustment For Rib-Eye-Area (R.E.A.)

Hot Carcass Wt. (lb.)	R.E.A. (sq. in.)
500	9.8
525	10.1
550	10.4
575	10.7
600	11.0
625	11.3
650	11.6
675	11.9
700	12.2
725	12.5
750	12.8
775	13.1
800	13.4
825	13.7
850	14.0
875	14.3
900	14.6

a. For each sq. in. more R.E.A. than shown in the above table, subtract .3 from the preliminary Y.G.

b. For each sq. in. less R.E.A. than shown in the above table, add .3 to the preliminary Y.G.

Step 3. Adjustment for % Kidney, Pelvic and Heart Fat (% KPH Fat)

a. For each % KPH fat more than 3.5%, add .20 to the adjusted Y.G. found in Step 2.

b. For each % KPH fat less than 3.5%, subtract .20 from the adjusted Y.G. found in Step 2.

THE FINAL YIELD GRADE HAS BEEN DETERMINED

Step 4. Round the Final Yield Grade down to the nearest .1

Example

2.73 = 2.7
2.78 = 2.7

EC 75-230

MEAT ANIMAL EVALUATION CUTABILITY GUIDE

U.S.D.A. Lamb Yield Grades (Y.G.)

Step 1. Determine Preliminary Yield Grade

Fat Thickness (in.)	Preliminary Y.G.
.00	2.00
.05	2.33
.10	2.67
.15	3.00
.20	3.33
.25	3.67
.30	4.00
.35	4.33
.40	4.67
.45	5.00
.50	5.33
.55	5.67

Step 2. Adjustment For Leg Score

a. For each leg score above 11, subtract .05 from the preliminary Y.G.

b. For each leg score less than 11, add .05 to the preliminary Y.G.

Leg Scores

P+ = 15	C+ = 12	G+ = 9
Po = 14	Co = 11	Go = 8
P- = 13	C- = 10	G- = 7

Step 3. Adjustment for % Kidney and Pelvic Fat (% KP Fat)

a. For each % KP Fat more than 3.5%, add .25 to the adjusted Y.G. found in Step 2.

b. For each % KP Fat less than 3.5%, subtract .25 from the adjusted Y.G. found in Step 2.

THE FINAL YIELD GRADE HAS BEEN DETERMINED

Step 4. Round the Final Yield Grade down to the nearest .1

Example

3.33 = 3.3
3.38 = 3.3

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Leo E. Lucas, Director

WHOLESALE CUTS AND GRADES OF BEEF, PORK, AND LAMB
UNIT XII

ANSWERS TO TEST

1.
   - A. 3
   - B. 7
   - C. 1
   - D. 2
   - E. 4
   - F. 6
   - G. 5

2.
   - a. rump
   - b. round
   - c. hind shank
   - d. loin
   - e. flank
   - f. ribs
   - g. plate
   - h. chuck
   - i. foreshank
   - j. brisket

3.
   - a. 3 Traces
   - b. 6 Slight
   - c. 2 Small
   - d. 5 Modest
   - e. 7 Moderate
   - f. 1 Slightly abundant
   - g. 4 Moderately abundant
   - h. 8 Abundant
   - i. 9 Very abundant

4.
   - a. Prime
   - b. Choice
   - c. Good
   - d. Standard
   - e. Utility
   - f. Commercial
   - g. Cutter
   - h. Canner

5. Quality grades are determined by three subjectively scored factors: conformation score, maturity score, and marbling score.

6.
   - 3.00
   - −.36
   - −.10
   - 2.54

   Rounded Answer 2.5

7.
   - a. Jowl
   - b. Boston butt
   - c. Picnic
   - d. Loin
   - e. Side
   - f. Ham

8.
   - a. U.S. No. 1
   - b. U.S. No. 2
   - c. U.S. No. 3
   - d. U.S. No. 4
   - e. Utility

9. U.S.D.A. Pork Grade 2+

10.
   - a. Leg
   - b. Sirloin
   - c. Flank
   - d. Loin
   - e. Rack
   - f. Square cut
   - g. Breast

11.
   - a. Prime
   - b. Choice
   - c. Good
   - d. Utility

12.
   - 2.33
   - −.05
   - −.50
   - 1.78

   Rounded Answer 1.7

13.
   - a. Beef 55%
   - b. Pork 72-75%
   - c. Lamb 45-48%

COMPANION ANIMAL GROOMING
UNIT XIII

UNIT OBJECTIVE

After completion of this unit, the student should be able to describe the proper method of grooming a dog, cat, and horse; identify the various equipment used in grooming each; and be able to demonstrate cleaning a horse's foot. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with companion animal grooming to the correct definitions.
2. List four factors about horse grooming.
3. List four factors about cleaning a horse's hoof.
4. List four factors about cat grooming.
5. Describe three areas of grooming a dog.
6. Demonstrate the ability to:
    a. Clean horse's hoof.
    b. Bathe a dog.
    c. Trim and file nails.
    d. Comb dog.

COMPANION ANIMAL GROOMING
UNIT XIII

SUGGESTED ACTIVITIES

I. Instructor:

- A. Provide students with objective sheet.
- B. Provide students with information and job sheets.
- C. Make transparencies.
- D. Discuss unit and specific objectives.
- E. Discuss information sheets.
- F. Demonstrate and discuss procedures outlined in job sheets.
- G. Give test.

II. Student:

- A. Read objectives.
- B. Study information sheet.
- C. Demonstrate the ability to accomplish the procedures outlined in the job sheets.
- D. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

- A. Objective sheet
- B. Information sheets
- C. Transparency masters
    1. TM 1—Bathing Companion Animals
    2. TM 2—Shedding—Influenced by Day Length
- D. Job sheets
    1. Job Sheet #1—Clean Horse's Hoof

2. Job Sheet #2—Bathe a Dog

3. Job Sheet #3—Trim and File Nails

4. Job Sheet #4—Comb a Dog

E. Test

F. Answers to test

II. References:

A. Carlile, Robert B. *Veterinarian Assistant.* Columbia, Missouri: Instructional Materials Laboratory, 1975.

B. Whitney, Leon F., D.V.,. *The Complete Book of Dog Care.* Garden City, New York: Doubleday and Company, Inc., 1953.

C. Whitney, Leon F., D.V.M. *The Complete Book of Cat Care.* Garden City, New York: Doubleday and Company, Inc., 1953.

COMPANION ANIMAL GROOMING
UNIT XIII

INFORMATION SHEET

I. Terms and definitions

A. Matting comb—Heavy comb with wide teeth used for removing mats from long-haired breeds

B. Finishing comb—Regulation sized comb with about 62 teeth of which half are medium sized and half fine; used on all breeds and cats

C. Wire slicker brush—Wire brush made in various sizes and used for removing dead hair and dematting on all breeds

D. Universal slicker brush—Curved wire brush used specifically for dematting

E. Pin brush—Oval brush used for regular brushing and dematting of long-coated dogs

F. Rubber brush—Round or rectangular brush used on short-coated breeds for removing dead hair

G. Shedding brush—Metal blade with leather handles on each end; when clasped together forms an oval; used on breeds which shed excessively, such as German Shepherd and Siberian Husky

H. Guillotine—Nail clipper used for small and medium sized dogs

I. Cage dryer—Used to dry an animal inside a cage and is placed on the door

J. Floor dryer—High speed blow dryer used to fluff dry a long-coated dog

K. Hemostat—Stainless steel scissor-like clamp used to clean and pluck hair from ears

L. Scissors—Pliers-type nail clippers used for large dogs and hard nails

II. Horse grooming

A. Groom horse each day

B. Follow a definite system

INFORMATION SHEET

C. Start at head and work back on the near side (left side)

D. Don't neglect the head

E. Use wet sponge or soft brush to remove dirt from head area

F. Brush with the lay of the hair

G. Use your hands to rub, scratch, and massage

H. Work out tangles in mane and tail with fingers and coarse-tooth comb

III. Cleaning a horse's hoof

A. Proper cleaning of feet requires that you pick up each foot

B. Every foal should be taught to allow having its foot picked up and handled, thus when full-grown it will be accustomed to it

C. If you trim feet as the foal grows, you should have no trouble when it becomes full grown

D. Always work in order: near forefoot, near hind, off-forefoot, off-hind

E. Clean the hoof from heel to toe

(NOTE: Do not disturb frog)

F. Clean cleft and commissures

G. Check the growth of the hoof for time to change shoes

IV. Grooming cats

A. Start grooming when a kitten

B. Use a wide-toothed metal comb and a fine-toothed flea comb, also a brush with long but not harsh bristles

(NOTE: Never use a brush with wire bristles.)

C. Long-hair needs more grooming

D. For stains or grease remove with alcohol

E. Rub bay rum into the coat

F. Talcum powder is good for white or light-haired cats

G. Bathe the cat if very dirty

H. Use nail clippers for the claws

INFORMATION SHEET

9. Bathe in warm room

V. Grooming dogs

A. Coat

1. Short-haired—brushed
2. Terrier—plucking
3. Long-coated
    a. Combed
    b. Brushed

B. Nails

1. Cut periodically
2. Dew claw removed in first days of pup's life
3. Ordinary scissors should not be used to cut the nails

C. Eyes

1. Clean when eyes are red and discharge is in corner of eye
2. Wash with boric acid solution or salt solution
3. Don't force open newborn pup's eyes
4. Abnormal condition may be found secondary to infectious diseases

D. Ears

1. Irritation caused by soap, ear mites, water, or excessive wax
2. Symptoms
    a. Shaking head
    b. Scratching
    c. Holding ear down
3. Never wash ear with alcohol or peroxide

E. Baths (Transparency 1)

1. Give as seldom as possible

INFORMATION SHEET

2. Frequent bathing removes oils and coat becomes dry and harsh
3. Wash well with coconut oil shampoo or a mild soap

F. Shedding (Transparency 2)

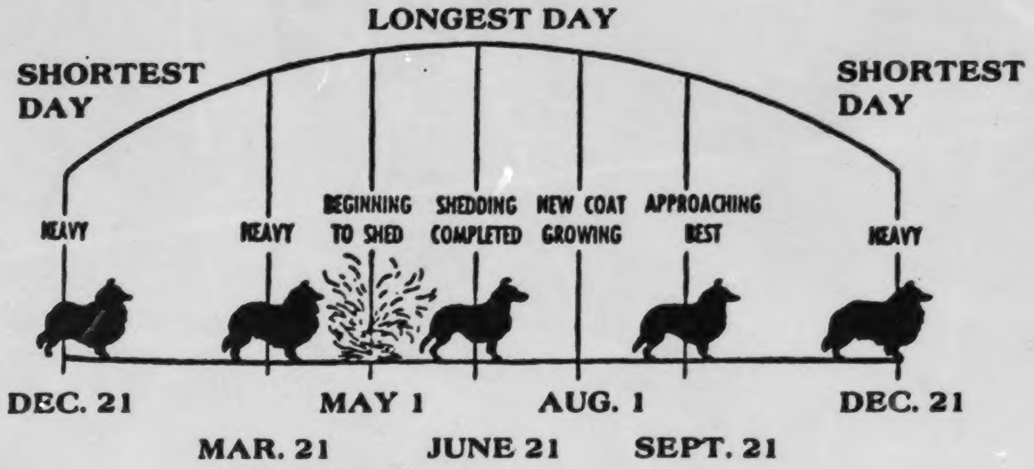
1. Influenced by day length
2. Some shed twice a year while other constantly
3. Brushing is important when shedding

B-421-B

BATHING
COMPANION ANIMALS

TM 1

SHEDDING - INFLUENCED BY DAY LENGTH


LONGEST DAY
SHORTEST DAY
SHORTEST DAY
HEAVY
HEAVY
BEGINNING TO SHED
SHEDDING COMPLETED
NEW COAT GROWING
APPROACHING BEST
HEAVY
DEC. 21
MAY 1
AUG. 1
DEC. 21
MAR. 21
JUNE 21
SEPT. 21

TM 2

COMPANION ANIMAL GROOMING

UNIT XIII

JOB SHEET #1—CLEAN HORSE'S HOOF

I. Equipment and materials

   A. Hoof pick

   B. File

   C. Apron

II. Procedure

   A. Near forefoot

      1. Slide left hand down cannon to fetlock (Figure 1)

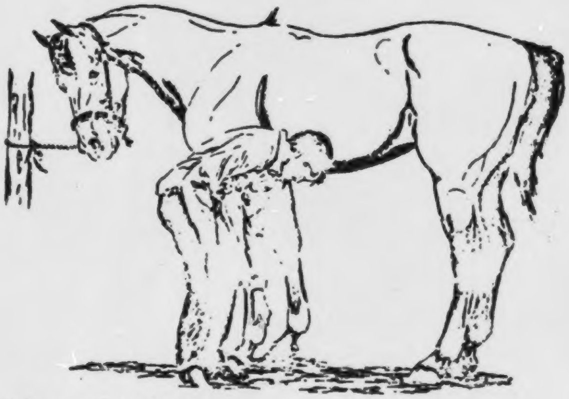


Figure 1

      2. Lean left shoulder against horse

      3. Pick up foot when horse shifts weight

      4. Place horse's foot between your legs

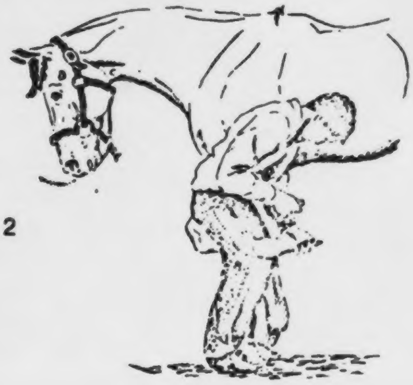


Figure 2

5. Clean hoof, heel to toe

B. Near hind foot

1. Stand forward of the hindquarter
2. Stroke right hand from point of hip down the hip to middle cannon
3. Place left hand on hip, pressuring horse to shift weight (Figure 3)

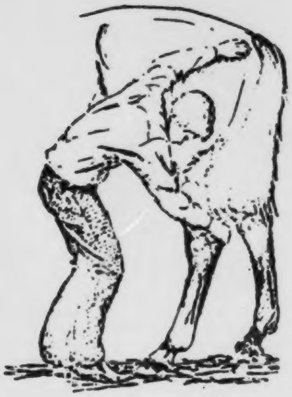
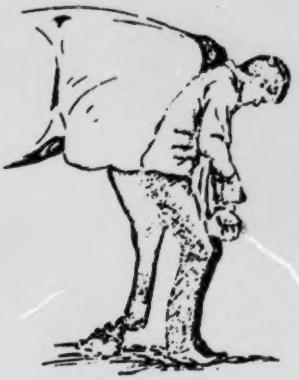


Figure 3

4. Move to rear, keeping your leg straight
5. Swing left leg over horse's fetlock
6. Hold hoof with left hand
7. Clean hoof, heel to toe with your right hand (Figure 4)



(Figure 4)

COMPANION ANIMAL GROOMING
UNIT XIII

JOB SHEET #2—BATHE A DOG

I. Tools and equipment

- A. Sponge
- B. Scrub brush
- C. Bowl
- D. Tub
- E. Spray hose

II. Procedure

- A. Mix shampoo
- B. Apply shampoo with eye drops
- C. Place animal in tub

  (NOTE: A dog's head should be put in a loop)
- D. Thoroughly wet down animal
- E. Apply shampoo with sponge and scrub in

  (NOTE: Keep soap away from ears, eyes, and face)
- F. Rinse and repeat
- G. Rinse a second time
- H. Squeeze off excess water
- I. Dry dog with dry towel
- J. Keep dog inside

COMPANION ANIMAL GROOMING
UNIT XIII

JOB SHEET #3—TRIM AND FILE NAILS

I. Equipment and materials

A. Sponge swab

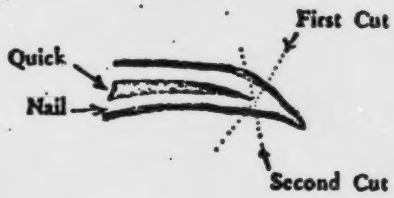
B. Grooming table with post and loop

C. Nail trimmer

D. Pedicure file

II. Procedure (Figure 1)

Figure 1



A. Place dog on table with head in loop and adjust to size

B. If nail is white, look for quick

C. Cut straight up for first cut

D. Make second cut on angle

E. Use pedicure file to smooth nail

(NOTE: If quick is cut, put Kwick stop on the end of finger and push on nail to stop bleeding.)

COMPANION ANIMAL GROOMING
UNIT XIII

JOB SHEET #4—COMB A DOG

I. Equipment

- A. Long bristled brush
- B. Stiff haired brush
- C. Hound glove
- D. Dull pointed scissors
- E. Knot remover

II. Procedure

- A. Place dog on table
- B. Start combing at head and shoulders and work back
- C. Remove mats and burs from hair
- D. Use stiff brush
- E. Trim a dog with long and unruly hair

COMPANION ANIMAL GROOMING
UNIT XIII

TEST

1. Match the terms on the right with correct definitions.

____ a. Used to dry an animal inside a cage and is placed on the door

____ b. Round or rectangular brush used on short-coated breeds for removing dead hair

____ c. Stainless steel scissor-like clamp used to clean and pluck hair from ears

____ d. High speed blow dryer used to fluff dry long-coated dog

____ e. Heavy comb with wide teeth used for removing mats from long-haired breeds

____ f. Curved wire brush used specifically for dematting

____ g. Regulation sized comb with 62 teeth of which half are medium sized and half fine; used on all breeds and cats

____ h. Wire brush made in various sizes and used for removing dead hair and dematting on all breeds

____ i. Oval brush used for regular brushing and dematting of long-coated dogs

____ j. Metal blade with leather handles on each end; when clasped together forms an oval; used on breeds which shed excessively, such as German Shepherd and Siberian Husky

____ k. Nail clipper used for small and medium sized dogs

____ l. Pliers-type nail clippers used for large dogs and hard nails

1. Matting comb
2. Finishing comb
3. Wire slicker brush
4. Universal slicker brush
5. Pin brush
6. Rubber brush
7. Shedding brush
8. Guillotine
9. Cage dryer
10. Floor dryer
11. Hemostat
12. Scissors

2. List four factors about horse grooming.

   a.

   b.

   c.

   d.

3. List four factors about cleaning a horse's hoof.

   a.

   b.

   c.

   d.

4. List four factors about cat grooming.

   a.

   b.

   c.

   d.

5. Describe the following areas of properly grooming a dog.

   a. Coat

   b. Ears

   c. Nails

B-437-B

COMPANION ANIMAL GROOMING
UNIT XIII

ANSWERS TO TEST

1. a. 9
   b. 6
   c. 11
   d. 10
   e. 1
   f. 4
   g. 2
   h. 3
   i. 5
   j. 7
   k. 8
   l. 12

2. Any four of the following:
   a. Grooming horse each day
   b. Follow a definite system
   c. Start at head and work back on the near side (left side)
   d. Don't neglect the head
   e. Use wet sponge or soft brush to remove dirt from head
   f. Brush with the lay of the hair
   g. Use your hands to rub, scratch, and massage
   h. Work out tangles in mane and tail with fingers and coarse-tooth comb

3. Any four of the following:
   a. Proper cleaning of feet requires that you pick up each foot
   b. Every foal should be taught to allow having its foot picked up and handled, thus when full grown it will be accustomed to it
   c. If you trim feet as the foal grows, you should have not trouble when it becomes full grown
   d. Always work in order near forefoot, near hind, off forefoot, off hind
   e. Clean the hoof from heel to toe; do not disturb frog
   f. Clean cleft and commissures
   g. Check the growth of the hoof for time to change shoes

4. Any four of the following:
   a. Start grooming when a kitten
   b. Use a wide-toothed metal comb and a fine-toothed flea comb, also a brush with long but not harsh bristles
   c. Long hair needs more grooming
   d. Rub bay rum into the coat
   e. Talcum powder is good for white or light-haired cats
   f. For stains or grease remove with alcohol
   g. Bathe the cat if very dirty
   h. Use nail clippers for the claws
   i. Bathe in warm room
5. Description should include:
   a. Coat
      1. Short-haired—brushed
      2. Terrier—plucking
      3. Long-coated
         a. Combed
         b. Brushed
   b. Ears
      1. Irritation caused by soap, ear mites, water, or excessive wax
      2. Symptoms
         a. Shaking head
         b. Scratching
         c. Holding ear down
6. Demonstrate the ability to:
   a. Clip nails.
   b. Clean horse's hoof.
   c. Bathe a dog.
   d. Apply standing bandage.
   e. Shape tail by bandaging.
   f. Braid a horse's mane.

ELEMENTARY STUDY OF SOILS
UNIT XIV

UNIT OBJECTIVE

After completion of this unit, the student should be able to select from a list reasons that soils are important. The student should be able to discuss soil formation and label layers of a soil profile. This knowledge will be evidenced by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with soils to the correct definitions.
2. Select from a list reasons that soils are important.
3. Discuss three factors that affect soil formation.
4. List five benefits of organic matter.
5. Identify three soil particles according to size.
6. Label an illustration showing the different layers of a soil profile.
7. Identify five kinds of soil structures.
8. Match colors of soils with the identifying characteristics of each.
9. Label a drawing showing the composition of an average soil.
10. Match terms indicating degree of erosion to the correct descriptions.
11. Match terms indicating soil depth to the correct descriptions.
12. Match terms indicating degrees of permeability to the correct descriptions.
13. Match terms indicating degrees of slope to the correct descriptions.

ELEMENTARY STUDY OF SOILS
UNIT XIV

SUGGESTED ACTIVITIES

I. Instructor:

  A. Provide student with objective sheet.

  B. Provide student with information sheet.

  C. Make transparencies.

  D. Discuss unit and specific objectives.

  E. Discuss information sheet.

  F. Conduct field trip to study soils.

  G. Give test.

II. Student:

  A. Read objectives.

  B. Study information sheet and take notes.

  C. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

  A. Objectives

  B. Information sheet

  C. Transparency masters

    1. TM 1--Types of Physical Weathering

    2. TM 2--Soil Particles

    3. TM 3--Soil Profile

    4. TM 4--Soil Structure

    5. TM 5--Composition of Average Soil

D. Test

E. Answers to test

II. References:

A. *Instructional Materials for Vocational Agriculture I*. College Station, Texas: Teaching Materials Center, Agricultural Education Department, Texas A&M University.

B. Millar, Charles Earnest, Lloyd M. Turk, and H. D. Foth. *Fundamentals of Soil Science*. New York: John Wiley and Sons, Inc.

C. Berger, Kermit C. *Introductory Soils*. New York: The Macmillan Company.

D. Donahue, Roy L. *Our Soils and Their Management*. Danville, Illinois: The Interstate Printers and Publishers, Inc.

E. *Plant Science*. Columbia, Missouri: State Department of Education, Agricultural Education Section, University of Missouri.

F. *Soil Structure*. Urbana, Illinois: Vocational Agriculture Service, University of Illinois.

G. *Soil Color*. Urbana, Illinois: Vocational Agriculture Service, University of Illinois.

H. *Land Judging*. Bulletin Number E.C. 5-36-68. Cooperative Extension Service, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln, Lincoln, Nebraska.

I. *NebGuides*. Lincoln, Nebraska: Cooperative Extension Service, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln, Lincoln, Nebraska.

ELEMENTARY STUDY OF SOILS
UNIT XIV

INFORMATION SHEET

I. Terms and definitions

A. Soil--Outer layer of the earth's crust capable of supporting plant growth; made up of mineral and organic matter

B. Organic matter--General term for plant and animal material in or on the soil in all stages of decomposition

(NOTE: In chemistry, *organic* refers to the compounds of carbons.)

C. Mineral--General term for the inorganic elements in the soil

Examples: Nitrogen, potash, phosphorus

D. Soil profile--Cross section of a soil from top to bottom (Transparency 3)

E. Soil texture--Size of the individual soil particles such as sand, silt, and clay

F. Soil color--Indication of the amount of organic matter, moisture, and texture of the soil

(NOTE: Kinds of compounds contained in the soil, such as iron (Fe_2O_3), will also give a characteristic color.)

G. Soil structure--Way in which individual soil particles are grouped together to form clusters of particles (Transparency 4)

H. Rock weathering--Process by which rocks are broken down into soil-sized particles through exposure to the weather over hundreds of years

I. Leaching--Removal of soil components from the soil by the downward action of water

J. Rock--More or less consolidated mass composed of two or more minerals

K. Aggregate--Single mass or cluster of soil particles such as a clod, crumb, or granule

L. Slope--Number of feet fall in each 100 feet of distance

M. Permeability--Ease of movement of air and water through the soil

N. Depth--Total thickness of soil from the topsoil to the parent material

INFORMATION SHEET

II. Importance of soils

  A. Provide food

  B. Provide energy

  C. Provide shelter

III. Factors affecting soil formation

  A. Parent materials

    1. Rocks

      a. Igneous--Derived from the molten materials in the center of the earth's crust

      b. Metamorphic--Formed from the pre-existing rocks through the action of extreme heat and great pressures

      c. Sedimentary--Deposited by rivers, moving glaciers, or wind

    2. Moved by

      a. Wind

      b. Water

      c. Glaciers

  B. Weathering (Transparency 1)

    1. Physical--Mechanical forces caused by temperature changes, such as heating and cooling, freezing and thawing, which have soil abrasive action

    2. Chemical--Chemical reactions of water, oxygen, and carbon dioxide

  C. Climate

    1. Temperature

    2. Rainfall

  D. Vegetation and organisms

    1. Plant--Lichens, mosses, weeds, grasses, shrubs, trees

    2. Animal--Bacteria, fungi, birds, man

INFORMATION SHEET

- E. Slope and drainage
    - 1. Hillsides
        - a. Thin topsoil caused by erosion
        - b. Less plant growth
        - c. Less organic matter
        - d. Less leaching
    - 2. Flat lands
        - a. Deeper topsoil
        - b. More vegetation
        - c. More organic matter
        - d. More leaching

IV. Benefits of organic matter

- A. Makes soil porous
- B. Supplies nitrogen to the plant
- C. Holds water in the soil
- D. Furnishes food for soil organisms
- E. Stores mineral nutrients
- F. Reduces leaching
- G. Stabilizes soil structure

V. Soil particles (Transparency 2)

- A. Sand--Greater than .05 mm
- B. Silt--.002 mm to .05 mm
- C. Clay--Less than .002 mm

VI. Soil profile (Transparency 3)

- A. Topsoil
- B. Subsoil
- C. Parent material

INFORMATION SHEET

VII. Kinds of soil structures (Transparency 4)

- A. Crumb--Very porous granular structure
- B. Granular--Individual grains are grouped into spherical aggregates with indistinct sides
- C. Platy--Aggregate has thin vertical axis and long horizontal axis; flat, tubular
- D. Prismatic--Aggregate is prismlike with vertical axis of the aggregate longer than the horizontal
- E. Blocky--Aggregate has equal sides; may be round or angular
- F. Columnar--Aggregate is columnlike with vertical axis longer than the horizontal

VIII. Soil color

- A. Dark brown to black--Regarded as being the most productive; usually contains a higher organic matter content
- B. Red or reddish brown--Usually less fertile than black or dark brown soils; may contain a high iron content
- C. Yellow--Usually caused by imperfect drainage
- D. Gray--Low in organic matter

IX. Composition of an average soil (Transparency 5)

- A. Mineral matter--48%
- B. Water--25%
- C. Air--25%
- D. Organic matter--2%

X. Degrees of erosion

- A. None to slight--Less than 25 percent of topsoil removed
- B. Moderate--26 to 75 percent of topsoil removed
- C. Severe--76 percent or more of the topsoil lost and up to 25% of the subsoil lost
- D. Very severe--76 percent or more of topsoil and from 25% to all of the subsoil lost. Very severely gullied or land destroyed by gullies.

INFORMATION SHEET

XI. Soil depths

A. Deep–More than 36 inches deep

B. Moderately deep--20 to 36 inches deep

C. Shallow--10 to 20 inches deep

D. Very shallow--Less than 10 inches deep

XII. Degrees of permeability

A. Slow--Heavy to moderately heavy

B. Moderately Slow--Moderately heavy–medium

C. Moderate--Moderately light–medium–moderately heavy

D. Moderately Rapid--Moderately light–light

E. Rapid--Light–very light

F. Very Rapid--Very light–Coarse sands and gravel

XIII. Degrees of slope*

A. Nearly level

B. Gently sloping

C. Moderately sloping

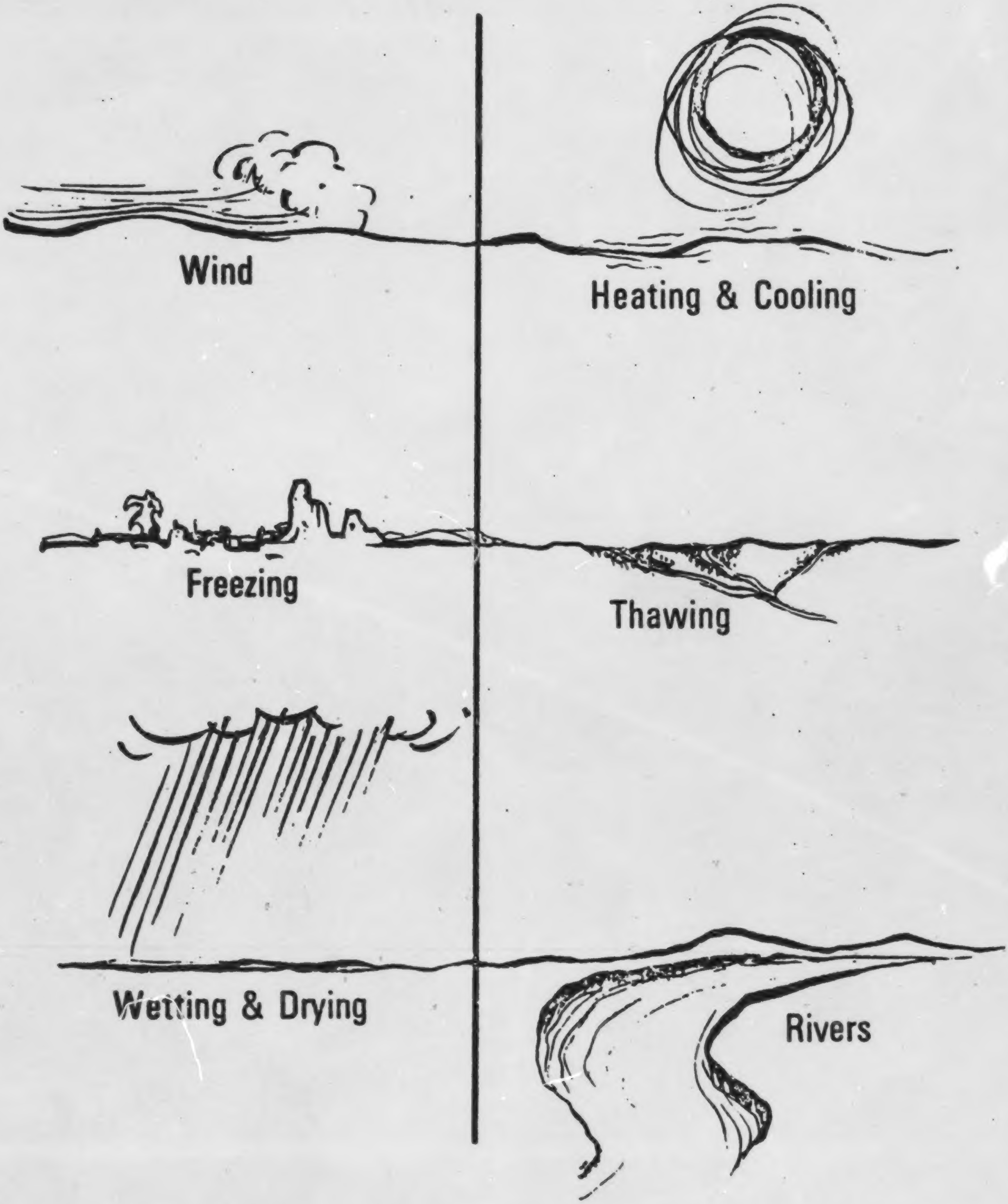
D. Strongly sloping

E. Steep

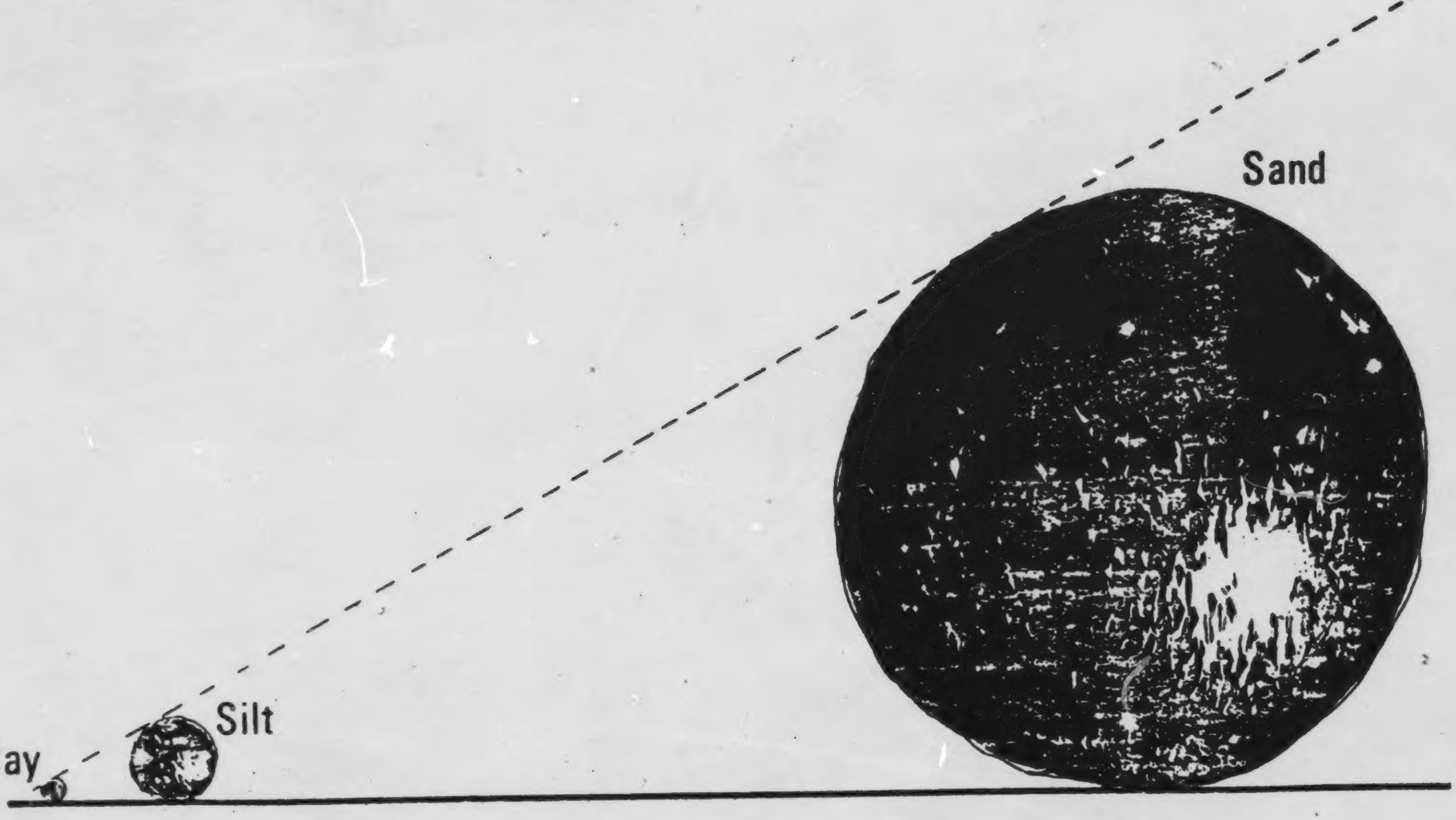
F. Very steep

*Slopes for each area to be added in by individual instructor

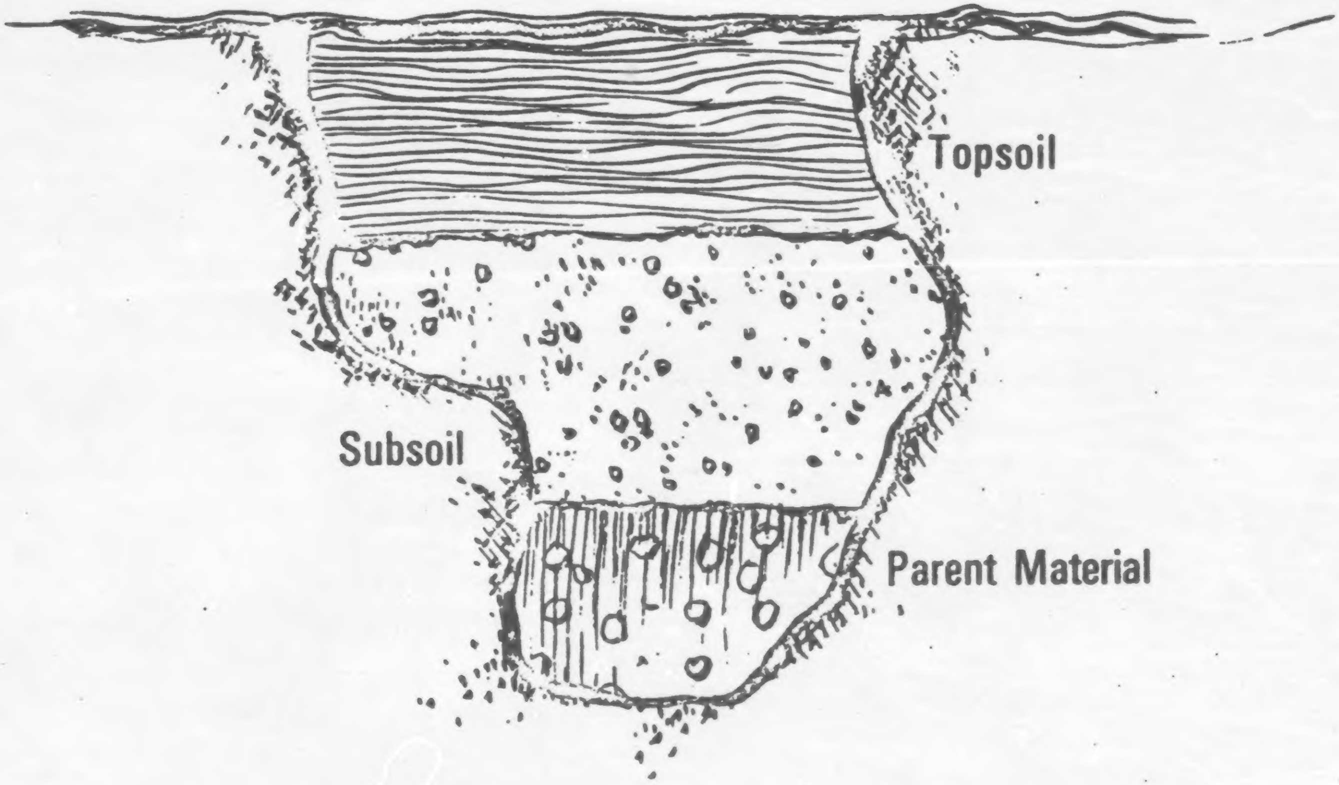
Types of Physical Weathering


Wind
Heating & Cooling
Freezing
Thawing
Wetting & Drying
Rivers

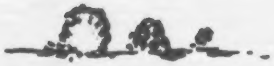
Soil Particles

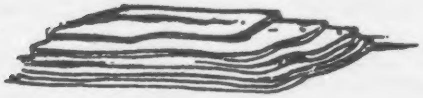

Sand
Silt
Clay

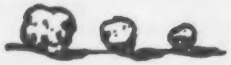
Soil Profile

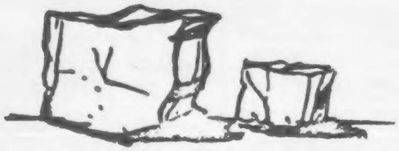

Topsoil
Subsoil
Parent Material

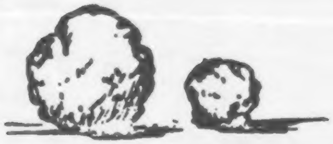
Soil Structure


Crumb

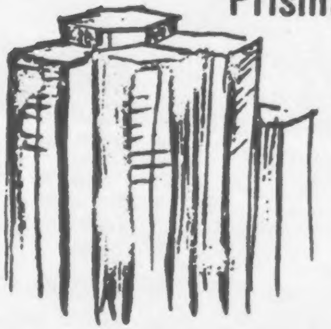

Platy


Granular

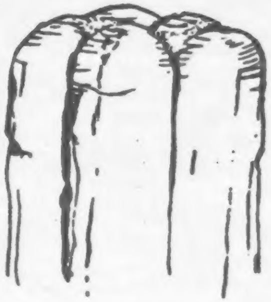

Angular Blocky


Subangular Blocky

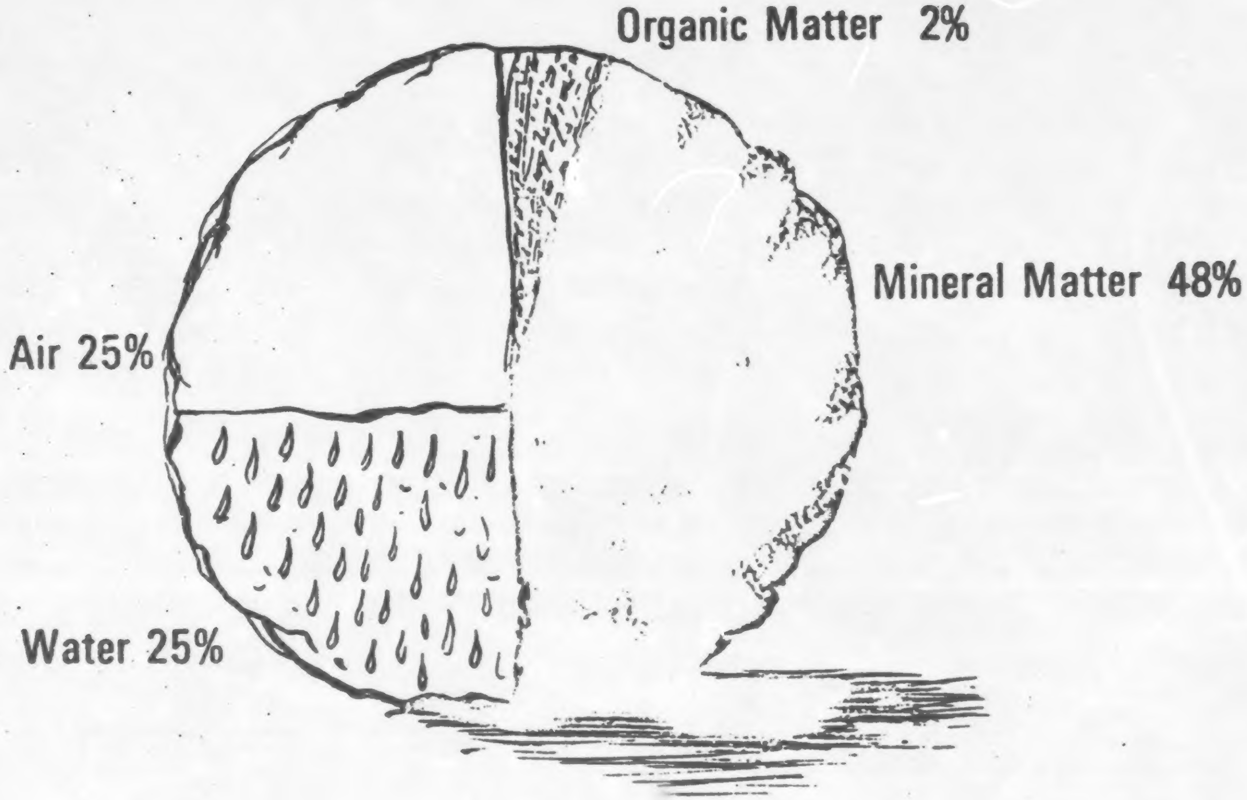
Prismatic



Columnar



Composition of Average Soil



ELEMENTARY STUDY OF SOILS
UNIT XIV

TEST

1. Match the terms on the right to the correct definition.

___ a. Way in which individual soil particles are grouped together to form clusters of particles

___ b. Cross section of a soil from top to bottom

___ c. Outer layer of the earth's crust capable of supporting plant growth; made up of mineral and organic matter

___ d. Total thickness of soil from the topsoil to the parent material

___ e. Single mass or cluster of soil particles such as a clod, crumb, or granule

___ f. Removal of soil components from the soil by the downward action of water

___ g. Indication of the amount of organic matter, moisture, and texture of the soil

___ h. General term for the inorganic elements in the soil

___ i. Ease of movement of air and water through the soil

___ j. Number of feet fall in each 100 feet of distance

___ k. General term for plant and animal material in or on the soil in all stages of decomposition

___ l. More or less consolidated mass composed of two or more minerals

___ m. Process by which rocks are broken down into soil-sized particles through exposure to the weather over hundreds of years

___ n. Size of the individual soil particles such as sand, silt, and clay

1. Soil
2. Organic matter
3. Mineral
4. Soil profile
5. Soil texture
6. Soil color
7. Soil structure
8. Rock weathering
9. Leaching
10. Rock
11. Aggregate
12. Slope
13. Permeability
14. Depth

2. Select from the list below reasons that soils are important by placing an "X" in the blanks.

   _____a. Holds the earth together

   _____b. Provides food

   _____c. Provides energy

   _____d. Provides a base on which to build houses

   _____e. Provides shelter

   _____f. Provides insulation

3. Discuss three factors that affect soil formation.

4. List five benefits of organic matter.

   a.

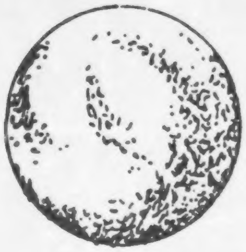
   b.

   c.

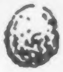
   d.

   e.

5. Identify three soil particles according to size.



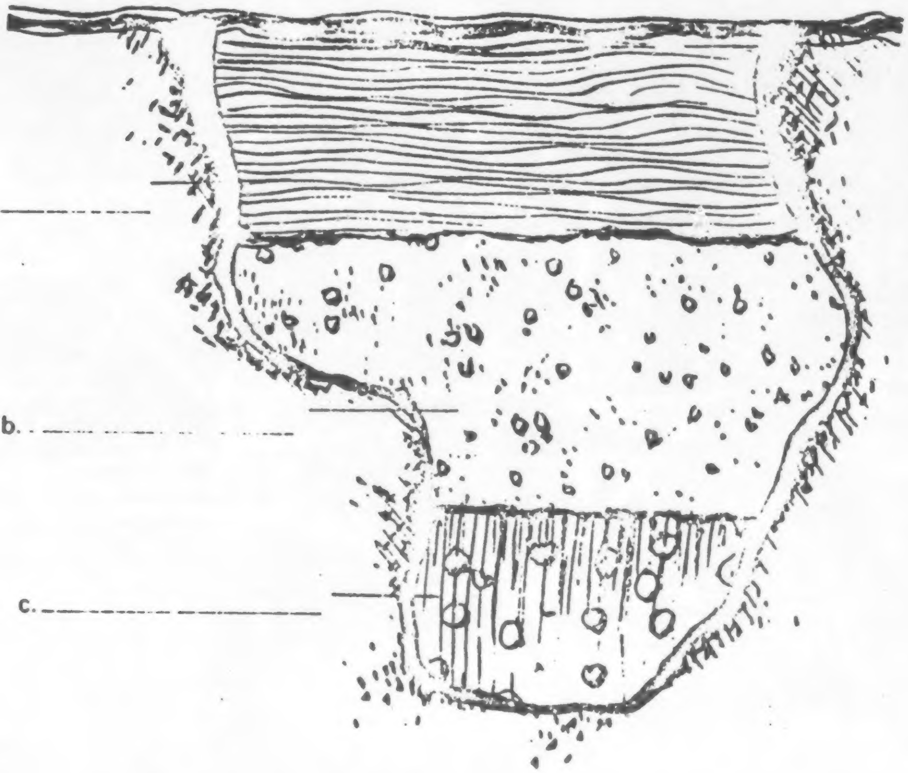
a. ______________________________



b. ______________________________

c. ______________________________

6. Label the drawing below showing the different layers of a soil profile.

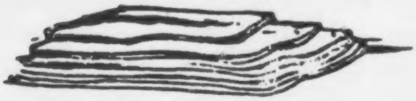


a. ______________________

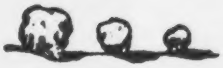
b. ______________________

c. ______________________

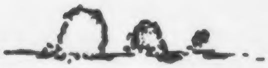
7. Identify five kinds of soil structures.



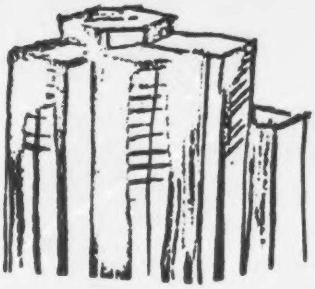
a. ______________________



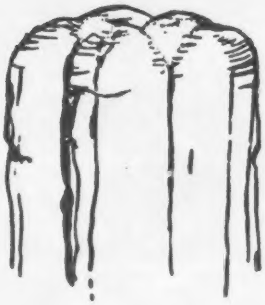
b. ______________________



c. ______________________



d. ______________________



e. __

8. Match the color of soil on the right to the correct characteristic.

_____a. Usually caused by imperfect drainage

_____b. Low in organic matter

_____c. Regarded as being the most productive; usually contains a higher organic matter content

_____d. Usually less fertile than black or dark brown soils; may contain a high iron content

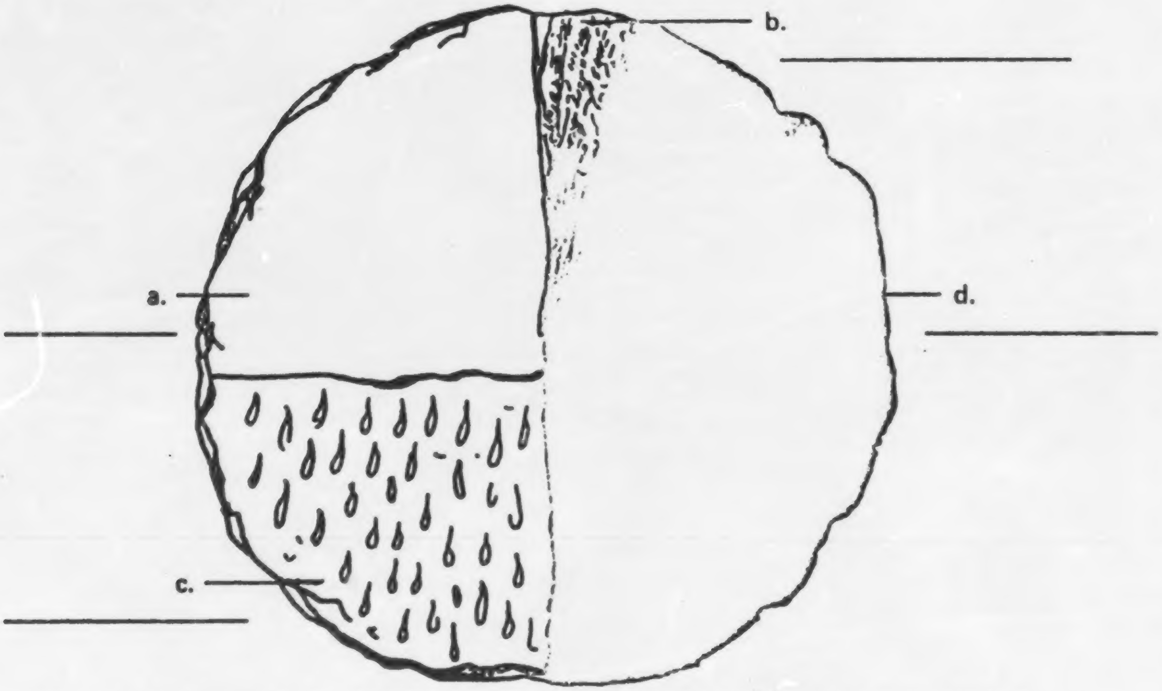
1. Dark brown to black

2. Red or reddish brown

3. Yellow

4. Gray

9. Label the drawing below showing composition of an average soil.



10. Match the terms indicating degree of erosion on the right to the correct description.

___ a. 76 percent of the topsoil lost to 25% of the subsoil lost

___ b. 76 percent of the topsoil and from 25% to all of the subsoil lost. Very severely gullied or land destroyed by gullies.

___ c. 26 to 75% of topsoil removed

___ d. less than 25% of topsoil removed

1. None to slight
2. Moderate
3. Severe
4. Very severe

11. Match terms indicating soil depth on the right to the correct description.

___ a. More than 36 inches deep

___ b. 20 to 36 inches deep

___ c. 10 to 20 inches deep

___ d. Less than 10 inches deep

1. Deep
2. Moderately deep
3. Shallow
4. Very shallow

12. Match the terms indicating degrees of permeability on the right to the correct description.

___ a. Soils that have sandy subsoils

___ b. Soils that have crumbly, clayey subsoils

___ c. Moderately light, light subsoils

___ d. Soils that have high granular, clay loam subsoils

1. Very slow
2. Slow
3. Moderate
4. Rapid

13. Match the terms indicating degrees of slope on the right to the correct description.

___ a. Less than ___ foot in each 100 feet

___ b. ___ to ____ feet fall in each 100 feet

___ c. ___ to ____ feet fall in each 100 feet

___ d. ___ to ____ feet fall in each 100 feet

___ e. ___ to ____ feet fall in each 100 feet

___ f. More than ___ feet fall in each 100 feet

1. Nearly level
2. Gently sloping
3. Moderately sloping
4. Strongly sloping
5. Steep
6. Very steep

*Instructors to fill in blanks with local figures

ELEMENTARY STUDY OF SOILS
UNIT XIV

ANSWERS TO TEST

1. a. 7
   b. 4
   c. 1
   d. 14
   e. 11
   f. 9
   g. 6
   h. 3
   i. 13
   j. 12
   k. 2
   l. 10
   m. 8
   n. 5

2. b, c, e

3. Discussion may include any three of the following:

   a. Parent materials

      1) Rocks

         a) Igneous--Derived from the molten materials in the center of the earth's crust

         b) Metamorphic--Formed from the pre-existing rocks through the action of extreme heat and great pressures

         c) Sedimentary--Deposited by rivers, moving glaciers, or wind

      2) Moved by

         a) Wind

         b) Water

         c) Glaciers

   b. Weathering

      1) Physical--Mechanical forces caused by temperature changes, such as heating and cooling, freezing, and thawing, which have soil abrasive action

      2) Chemical--Chemical reactions of water, oxygen, and carbon dioxide

c. Climate

  1) Temperature

  2) Rainfall

d. Vegetation and organisms

  1) Plant--Lichens, mosses, weeds, grasses, shrubs, trees

  2) Animal--Bacteria, fungi, birds, man

e. Slope and drainage

  1) Hillsides

    a) Thin topsoil caused by erosion

    b) Less plant growth

    c) Less organic matter

    d) Less leaching

  2) Flat lands

    a) Deeper topsoil

    b) More vegetation

    c) More organic matter

    d) More leaching

4. Any five of the following:

  a. Makes soil porous

  b. Supplies nitrogen to the plant

  c. Holds water in the soil

  d. Furnishes food for soil organisms

  e. Stores mineral nutrients

  f. Reduces leaching

  g. Stabilizes soil structure

5. a. Sand
   b. Silt
   c. Clay
6. a. Topsoil
   b. Subsoil
   c. Parent material
7. a. Platy
   b. Granular
   c. Crumb
   d. Prismatic
   e. Columnar
8. a. 3
   b. 4
   c. 1
   d. 2
9. a. Air
   b. Organic matter
   c. Water
   d. Mineral matter
10. a. 3
    b. 4
    c. 2
    d. 1
11. a. 1
    b. 2
    c. 3
    d. 4

12. a. 4
    b. 2
    c. 1
    d. 3
13. a. 1
    b. 3
    c. 5
    d. 2
    e. 4
    f. 6

SOIL CONSERVATION PRACTICES
UNIT XV

UNIT OBJECTIVE

After completion of this unit, the student should be able to list types of erosion and management practices that aid in conservation. The student should also be able to select from a list factors that determine cropping systems and conservation practices for reducing erosion. This knowledge will be evidenced by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with soil conservation practices to the correct definitions.
2. List two types of erosion.
3. Select from a list conservation practices for reducing wind erosion.
4. List four categories of water erosion.
5. Select from a list factors that determine the type of cropping system to use.
6. List four management practices that aid in erosion control.
7. Survey your home farm to see how you rate as a conservationist.
8. Survey your home community.
    a. List five examples of good conservation practices.
    b. List five examples of poor conservation practices.

SOIL CONSERVATION PRACTICES
UNIT XV

SUGGESTED ACTIVITIES

I. Instructor:

   A. Provide student with objective sheet.

   B. Provide student with information and assignment sheets.

   C. Make transparencies.

   D. Discuss unit and specific objectives.

   E. Discuss information and assignment sheets.

   F. Take student on field trips to see types of erosion and cropping systems.

   G. Give test.

II. Student:

   A. Read objectives.

   B. Study information sheet and take additional notes.

   C. Complete assignment sheets.

   D. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

   A. Objectives

   B. Information sheet

   C. Transparency masters

      1. TM 1--Terracing for Erosion Control

      2. TM 2--Crop Rotation for Erosion Control

      3. TM 3--Strip-Cropping for Erosion Control

      4. TM 4--Wind Control Measures

D. Assignment sheets

  1. Assignment Sheet No. 1--How Do You Rate as a Conservationist?

  2. Assignment Sheet No. 2--Locating Good and Poor Conservation Practices

E. Test

F. Answers to test

II. References:

A. Foster, Albert B. *Approved Practice in Soil Conservation*. Danville, Illinois: The Interstate Printers and Publishers, Inc., 1964.

B. Donahue, Roy L. *Our Soil and Their Management*. Danville, Illinois: The Interstate Printers and Publishers, Inc., 1963.

C. Millar, Charles Earnest, and Lloyd M. Turk. *Fundamentals of Soil Science*. New York: John Wiley and Sons, Inc., 1955.

D. Berger, Kermit C. *Introductory Soils*. New York: The Macmillan Company.

E. Knuti, Leo L., Melton Korpi, and J. C. Hide. *Profitable Soil Science*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1970.

F. *Instructional Materials for Vocational Agriculture I*. College Station, Texas: Teaching Materials Center, Agricultural Education Department, Texas A&M University.

G. *NebGuide*. Lincoln, Nebraska: Cooperative Extension Service, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln.

SOIL CONSERVATION PRACTICES
UNIT XV

INFORMATION SHEET

I. Terms and definitions

   A. Erosion--Removal of soil by wind and/or water

   B. Water outlet--Ditch which carries the excess water from farm

   C. Terracing--Structure designed to slow down running water and control erosion on sloping land (Transparency 1)

   D. Crop rotation--Rotation of crops on a field from one crop to another (Transparency 2)

   E. Strip-cropping--Practice of growing soil-conserving and soil-depleting crops in alternate strips running perpendicular to the slope of the land or to the direction of prevailing winds for the purpose of reducing erosion (Transparency 3)

   F. Diversion ditch--Ditch which prevents erosion by diverting water around a field rather than across

   G. Cover crop--Crop used to cover the soil surface to decrease erosion

II. Types of erosion

   A. Wind

   B. Water

III. Wind erosion conservation practices (Transparency 4)

   A. Strip-cropping

   B. Prevention of burning

   C. Prevention of overgrazing

   D. Moisture conservation

   E. Emergency cover crops

   F. Emergency tillage operations

   G. Stubble mulching

   H. Shelterbelt of trees

INFORMATION SHEET

IV. Categories of water erosion

   A. Splash
   B. Sheet
   C. Rill
   D. Gully

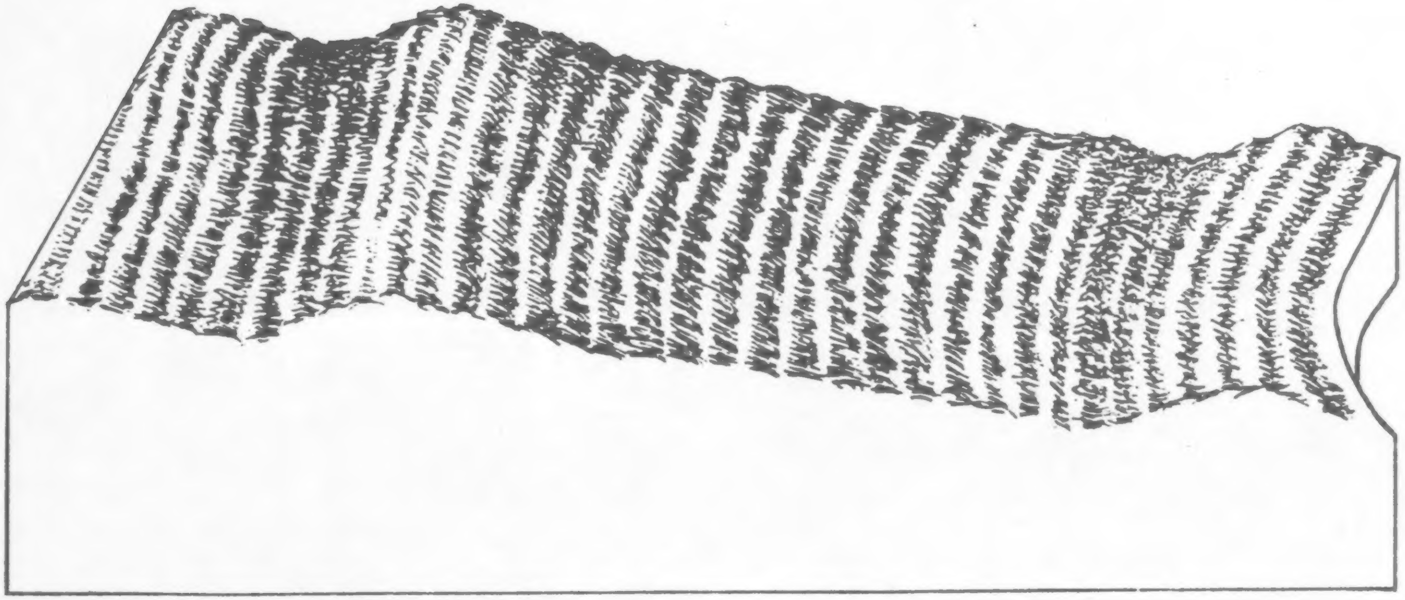
V. Factors determining cropping systems

   A. Slope
   B. Erodibility
   C. Drainage
   D. Moisture
   E. Depth
   F. Fertility
   G. Economics
   H. Land Capability Class

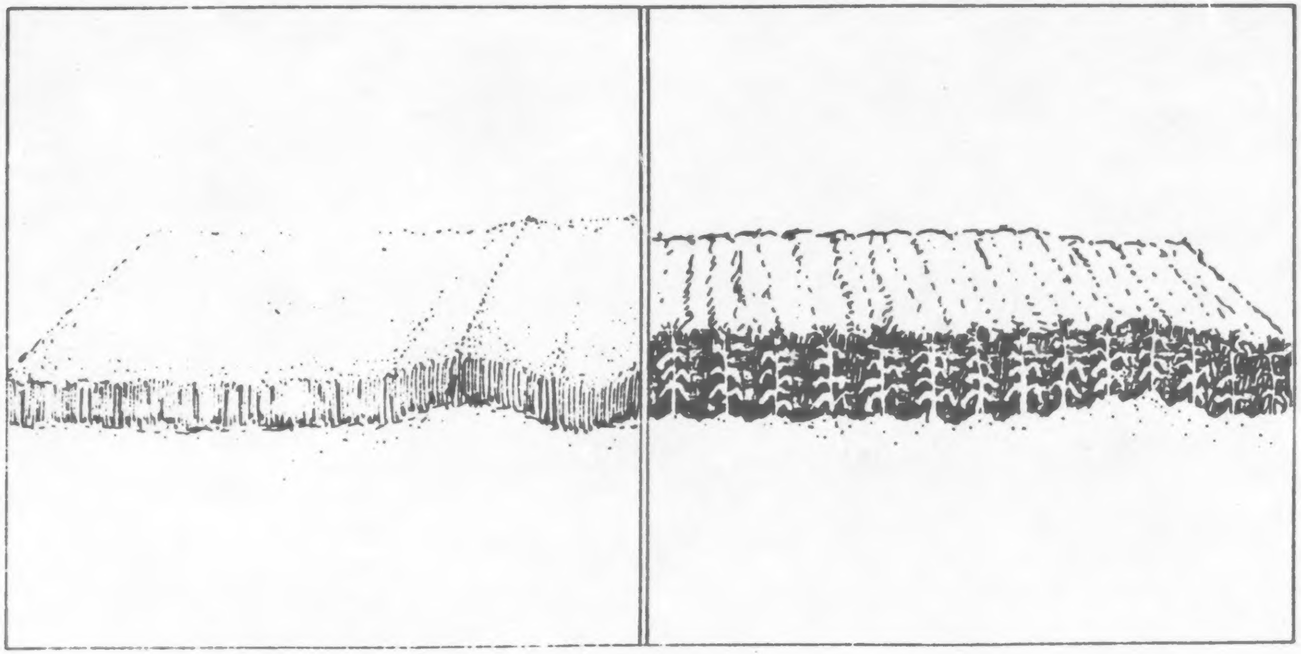
VI. Management practices that aid in erosion control

   A. Wise use of land
   B. Water control systems
      1. Terracing
      2. Diversion ditches
      3. Strip-cropping
      4. Crop rotation
      5. Water sullets (Natural Drainage)
      6. Contour farming
   C. Cover crops
   D. Control of gullies
   E. Use of fertilizer

Terracing for Erosion Control

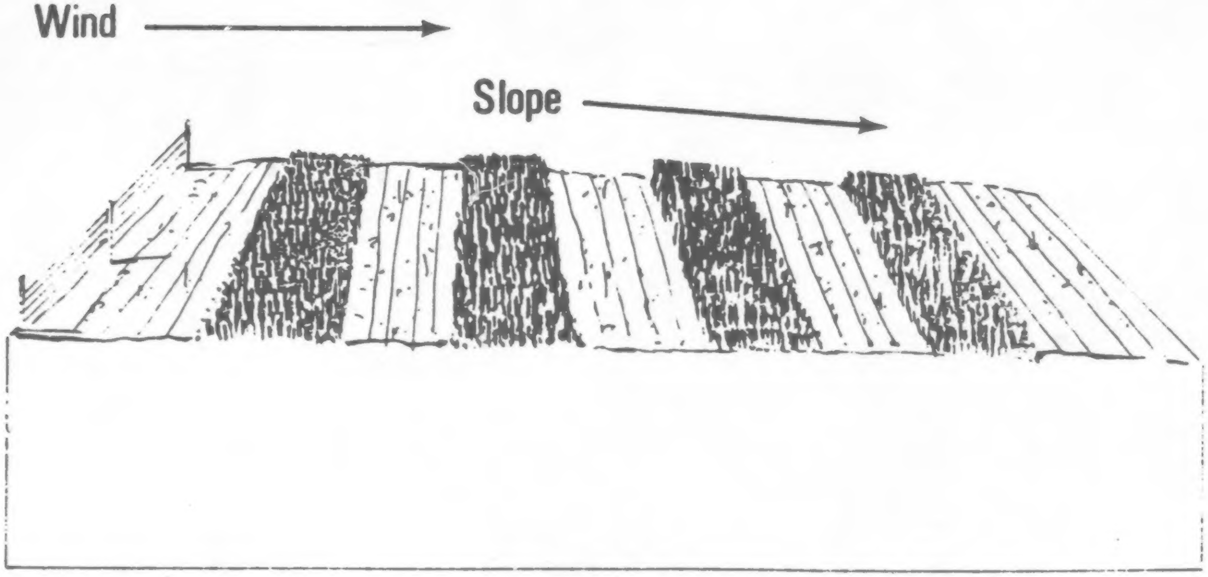


Crop Rotation for Erosion Control



B-477-B

Strip-Cropping
for Erosion Control



Wind Erosion Control Measures

A. Strip Cropping

B. Prevention of Burning

C. Prevention of Overgrazing

D. Moisture Conservation

E. Emergency Cover Crops

F. Emergency Tillage Operations

G. Wind Break Tree Planting

H. Shelter Belt of Trees

I. Stubble Mulching

SOIL CONSERVATION PRACTICES
UNIT XV

ASSIGNMENT SHEET NO. 1--HOW DO YOU RATE AS A CONSERVATIONIST?*

Answer the following questions as they relate to your home or farming operations or to a situation provided for you.

	YES	NO
1. Are droughts on your farm less severe than they used to be?	☐	☐
2. Can you cultivate as soon after a rain as you once could?	☐	☐
3. Do the rains seem to soak into your soil faster and deeper than they once did?	☐	☐
4. Do streams flood less frequently?	☐	☐
5. Do your fields drain properly?	☐	☐
6. Are your crop yields increasing?	☐	☐
7. When you plow, does your soil seem darker in color than it was a few years ago?	☐	☐
8. Do you notice fewer clay spots in the fields when you plow?	☐	☐
9. Are gullies getting smaller in size and fewer in number?	☐	☐
10. Does your soil drift against the fences less now than it once did?	☐	☐
11. When you dig post holes, do you find plant roots all the way to the bottom of the holes?	☐	☐
12. After a beating rain, does the surface of your soil still appear open and porous like a sponge?	☐	☐
13. Is it becoming less difficult to prepare a good seedbed?	☐	☐
14. Does your soil crust over less now than it once did?	☐	☐
15. Do you spread manure on your land as fast as it is produced?	☐	☐

ASSIGNMENT SHEET NO. 1

	YES	NO
16. Do you grow a soil-building legume at least one year in three?	☐	☐
17. Do you plow under or incorporate all crop residues into your soil?	☐	☐
18. Do your crops grow better in dry weather than they once did?	☐	☐
19. Does it take less power to plow your fields than it did a few years ago?	☐	☐
20. Do you cultivate just often enough to control weeds?	☐	☐
21. Do you use a disk and chisel more now than you do a turning plow?	☐	☐
22. Do you follow the recommended planting dates for all farm crops?	☐	☐
23. Do you follow a recommended crop rotation plan for all fields?	☐	☐
24. Do you plant the highest yielding varieties of crops?	☐	☐
25. Does your cropping system produce the most possible forage for your livestock?	☐	☐
26. Are your yields per acre as high as any in your neighborhood?	☐	☐
27. Have you increased the productivity of all of your fields and pastures?	☐	☐
28. Do you use as much limestone as any farmer on similar land in the neighborhood?	☐	☐
29. Do you fertilize your fields and pastures as much as do any of your neighbors?	☐	☐
30. Do you graze the right number of livestock on your range and pasture land?	☐	☐
31. Are your livestock healthy?	☐	☐

ASSIGNMENT SHEET NO. 1

	Yes	No
32. Do you have a home garden as good as any in your neighborhood?	☐	☐
33. Have you had your soil tested on all gardens, fields, and pastures within the past three years?	☐	☐

Your rating as a conservationist:

Total answers which are YES _____ NO _____

I am Good . . . . (22-33 YES answers)
Fair . . . . (11-21 YES answers)
Poor . . . . (0-10 YES answers)

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*The contents of Assignment Sheet No. 1 have been reprinted by permission from *Our Soils and Their Management* by Roy L. Donahue, published by The Interstate Printers and Publishers, Inc., Danville, Illinois.

SOIL CONSERVATION PRACTICES
UNIT XV

ASSIGNMENT SHEET NO. 2--LOCATING GOOD AND POOR CONSERVATION PRACTICES

Survey your home community and list five examples of good conservation practices.

1.

2.

3.

4.

5.

List five examples of poor conservation practices.

1.

2.

3.

4.

5.

SOIL CONSERVATION PRACTICES
UNIT XV

TEST

1. Match the terms on the right to the correct definition.

_____a. Rotation of crops on a field from one crop to another

_____b. Crop used to cover the soil surface to decrease erosion

_____c. Removal of soil by wind and/or water

_____d. Practice of growing soil conserving and soil-depleting crops in alternate strips running perpendicular to the slope of the land or to the direction of prevailing winds for the purpose of reducing erosion

_____e. Ditch which carries the excess water from the farm

_____f. Ditch which prevents erosion by diverting water around a field rather than across

_____g. Structure designed to slow down running water and control erosion on sloping land

1. Erosion
2. Water outlet
3. Terracing
4. Crop rotation
5. Strip-cropping
6. Diversion ditch
7. Cover crop

2. List two types of erosion.

a.

b.

3. Select from the list below conservation practices for reducing wind erosion by placing an "X" in the blanks.

_____a. Strip-cropping

_____b. Prevention of burning

_____c. Prevention of overgrazing

_____d. Moisture conservation

_____e. Emergency tillage operations

_____f. Emergency cover crops

_____g. Stubble mulching

_____h. Shelterbelt of trees

4. List four categories of water erosion.

   a.

   b.

   c.

   d.

5. Select from the list below factors that determine the type of cropping system to use by placing an "X" in the blanks.

   _____a. Slope

   _____b. Fertility

   _____c. Drainage

   _____d. Depth

   _____e. Economics

   _____f. Row crop

6. List four management practices that aid in erosion control.

   a.

   b.

   c.

   d.

7. Survey your home farm to see how you rate as a conservationist.

8. Survey your home community.

   a. List five examples of good conservation practices.

   b. List five examples of poor conservation practices.

   (NOTE: If activities 7 and 8 have not been accomplished prior to the test, ask the instructor when they should be completed.)

SOIL CONSERVATION PRACTICES
UNIT XV

ANSWERS TO TEST

1. a. 4
   b. 7
   c. 1
   d. 5
   e. 2
   f. 6
   g. 3
2. a. Wind
   b. Water
3. a, b, c, d, e, f, g, h
4. a. Splash
   b. Sheet
   c. Rill
   d. Gully
5. a, b, c, d, e
6. Any four of the following:
   a. Wise use of land
   b. Water control systems
   c. Cover crops
   d. Control of gullies
   e. Use of fertilizer
7. Evaluated to the satisfaction of the instructor.
8. Evaluated to the satisfaction of the instructor.

PLANTING MEDIA
UNIT XVI

UNIT OBJECTIVE

After completion of this unit, the student should be able to mix ingredients for one cubic yard of planting medium and pasteurize soil. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms associated with planting media to the correct definitions.
2. List five key characteristics describing an ideal planting medium.
3. List three methods of sterilizing media mixtures.
4. List three ingredients used in a basic planting media.
5. List six chemical ingredients used in basic planting meida.
6. Arrange in order the five steps in mixing planting media.
7. Demonstrate the ability to:
    a. Mix the ingredients for one cubic yard of planting medium.
    b. Pasteurize soil.

PLANTING MEDIA
UNIT XVI
SUGGESTED ACTIVITIES

I. Instructor:

   A. Provide students with objective sheet.

   B. Provide students with information and job sheets.

   C. Make transparencies.

   D. Discuss unit and specific objectives.

   E. Discuss information sheets.

   F. Discuss and discuss procedures outlined in job sheets.

   G. Give test

II. Student :

   A. Read objectives.

   B. Study information sheets.

   C. Demonstrate the ability to accomplish the procedures outlined in the job sheets.

   D. Take test

INSTRUCTIONAL MATERIALS

I. Included in this unit

   A. Objective sheet

   B. Information sheet

   C. Transparency masters

      1. TM 1—Types of Planting Media

      2. TM 2—Proper Mixing of Growing Media

   D. Job sheets

      1. Job Sheet #1—Mix Planting Medium

      2. Job Sheet #2—Pasteurize Soil

   E. Test

   F. Answers to test

II. References:

A. Chandler, Philip A. *The U.C. System for Producing* Container Plants. San Luis Obispo: University of California, Division of Agricultural Sciences; 1968.

PLANTING MEDIA
UNIT XVI

INFORMATION SHEET

I. Terms and definitions

A. Peat moss—Partially decomposed remains of aquatic vegetation which has been preserved under water; has very high water-holding capacity and is a basic ingredient in media mixes

B. Vermiculite—Expanded mineral that has a high water-holding capacity

C. Perlite—Volcanic pumic used in media mixes in place of sand

D. Sand—Small rock grains used as an ingredient in media mixes

E. Sphagnum moss—Dehydrated remains of bog plants; high in water holding capacity

F. Potassium nitrate—Fertilizer material that provides the nutrients potassium and nitrogen

G. Potassium sulphate—Fertilizer material that provides the nutrients potassium and sulphur

H. Single sulpha phosphate—Fertilizer material that provides the nutrient phosphorus

I. Dolomite limestone—Soil amendment that neutralizes the acid in the media and provides the nutrient magnesium

J. Gypsum—Soil amendment that neutralizes the acid in the media and provides the nutrient sulphur

K. Calcium carbonate lime—Soil amendment that consists of powdered limestone that neutralizes acid in soil media

II. Characteristics of an ideal planting medium

A. Porous

B. Dense

C. Sterile

D. Nutritious

E. Lightweight

INFORMATION SHEET

II. Methods of sterilizing media mixtures

  A. Steam

  B. Chemicals

  C. Dry heat

  (NOTE: A temperature of 180 F for 30 minutes will sterilize a medium)

IV. Ingredients used in a basic planting medium (Transparency 1)

  A. Sand

  B. Peat

  C. Perlite

  D. Vermiculite

  E. Sphagnum moss

V. Chemical ingredients used in a basic planting medium

  A. Potassium nitrate

  B. Potassium sulphate

  C. Single sulpha phosphate

  D. Dolomite limestone

  E. Gypsum

  F. Calcium carbonate lime

VI. Procedure for mixing planting media (Transparency 2)

  A. Dampen peat moss 1 to 2 days before mixing

  B. Spread chemical components on top

  C. Start a second pile with materials from the first

  D. Repeat until blended

  E. Mixing with machine

TYPES OF MEDIA

SAND

PEAT

SPHAGNUM PEAT

VERMICULITE

PERLITE

BARK, SAWDUST, & WOOD SHAVINGS

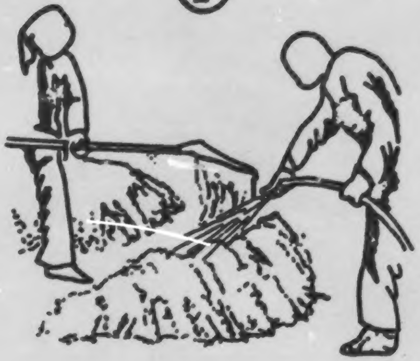
SOIL AMENDMENT

TM 1

B-499-8

PROPER MIXING OF A GROWING MEDIA

①



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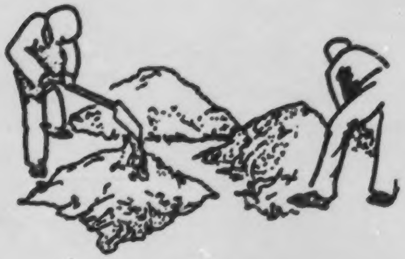

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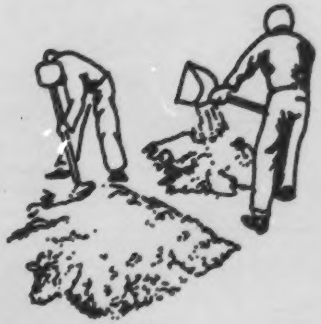

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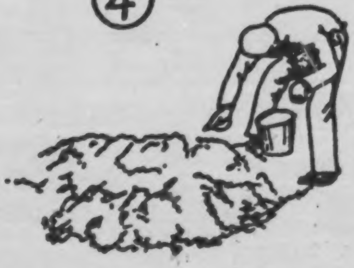

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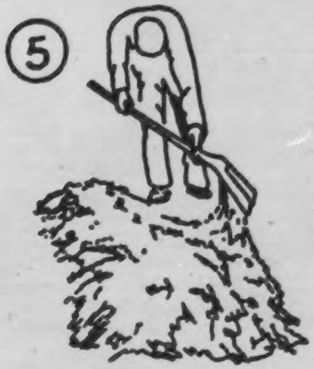

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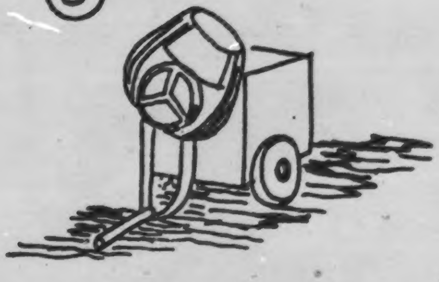


PLANTING MEDIA
UNIT XVI

JOB SHEET #1—MIX PLANTING MEDIUM

I. Materials

   A. Fine sand

   B. Peat moss

   C. Potassium nitrate

   D. Potassium sulphate

   E. Single super phosphate

   F. Dolomite limestone

   G. Gypsum

   H. Scale that registers in ounces and pounds

   I. Shovel

   J. Flat surface

   K. Five gallon container

   (NOTE: 176 gal.=1#cu. yd.)

   L. One or two gallon bucket or pan

II. Procedure

   A. Weigh out and place in the bucket the fertilizer materials

   B. Mix fertilizer materials until uniformly combined

   C. Place sand in a low pile on mixing floor

   D. Spread peat moss evenly over sand

   E. Spread fertilizer mix uniformly over peat moss and sand

   F. With shovel turn until all ingredients are uniformly mixed

PLANTING MEDIA
UNIT XVI

JOB SHEET #2—PASTEURIZE SOIL

I. Tools and Equipment

  A. Soil

  B. Water

  C. Steam supply

  D. Porous canvas hoses

  E. Vinyl covering

  F. Soil thermometers

II. Procedure

  A. Measure soil

  B. Moisten all of the soil

  C. Lay a porous canvas hose under the soil

  D. Connect porous canvas hose to steam supply

  E. Tie cover down on edges

  F. Place soil thermometer at various locations

  G. Heat to 180 degrees for 30 minutes

B-507-B

PLANTING MEDIA
UNIT XVI

TEST

1. Match the terms on the right to the correct definitions.

____ a. Fertilizer material that provides the nutrients potassium and nitrogen

____ b. Expanded mineral that has a high water-holding capacity; is used as an ingredient in media mixes

____ c. Dehydrated remains of bog plants; high in water-holding capacity

____ d. Soil amendment that consists of powdered limestone that neutralizes acid in soil media

____ e. Soil amendment that neutralizes the acid in the soil media

____ f. Small rock grains used as an ingredient in media and provides the nutrient sulphur

____ g. Fertilizer material that provides the nutrient phosphorus

____ h. Partially decomposed remains of aquatic vegetation which has been preserved under water and has high water holding capacity and is a basic ingredient in media mixes

____ i. Fertilizer material that provides the nutrients potassium and sulphur

____ j. Volcanic pumic used in media mixes in place of sand

____ l. Soil amendment that neutralizes the acid in the media and provides the nutrient magnesium

1. Peat
2. Vermiculite
3. Perlite
4. Sand
5. Sphagnum
6. Potassium nitrate
7. Potassium Sulphate
8. Single sulpha phosphate
9. Dolmite limestone
10. Gypsum
11. Calcium carbonate lime

2. List five key characteristics that describe an ideal planting mixture.

   a.

   b.

   c.

   d.

   e.

3. List three methods of sterilizing media mixtures.

   a.

   b.

   c.

4. List three ingredients used in a basic planting medium.

   a.

   b.

   c.

5. List six chemical ingredients used in a basic planting medium.

   a.

   b.

   c.

   d.

   e.

   f.

6. Arrange in order the five steps in mixing planting media. Place a 1 by the first step a two by the second through five on the last step.

   ____ a. Start a second pile with materials from the first

   ____ b. Dampen peat moss 1 to 2 days before mixing

   ____ c. Mixing with machine

____ d. Spread a second pile with materials from the first

____ e. Repeat until blended

7. Demonstrate the ability to:

   a. Mix the ingredients for one cubic yard of planting medium.

   b. Pasteurize soil.

PLANTING MEDIA
UNIT XVI
ANSWERS TO TEST

1. a. 6
   b. 2
   c. 5
   d. 11
   e. 10
   f. 4
   g. 8
   h. 1
   i. 7
   j. 3
   k. 9
2. a. Porous
   b. Dense
   c. Sterile
   d. Nutritious
   e. Lightweight
3. a. Steam
   b. Chemical
   c. Dry heat
4. Any three of the following:
   a. Sand
   b. Peat
   c. Vermiculite
   d. Sphagnum moss

5. a. Potassium nitrate
   b. Potassium sulphate
   c. Single sulpha phosphate
   d. Dolomite limestone
   e. Gypsum
   f. Calcium carbonate lime
6. a. 3
   b. 1
   c. 5
   d. 2
   e. 4
7. Performance skills evaluated to satisfaction of instructor.

FERTILIZERS
UNIT XVII

UNIT OBJECTIVE

After completion of Unit XVII, the student should be able to identify deficiency symptoms of the major plant nutrients while observing the growing plant. The student should be able to take soil test information or plant growth information and determine the amount of fertilizer to use. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of instruction, the student should be able to:

1. Match terms associated with fertilizers to the correct definition.
2. Name five factors that influence the use of fertilizers.
3. Name the sixteen elements known to be essential for plant growth and name the correct chemical symbol for each.
4. Name the three major (primary) plant nutrients and name three characteristics of each.
5. Name three minor (secondary) plant nutrients and name three characteristics of each.
6. Name three micro-elements necessary for plant growth which are usually found in sufficient quantity in most soils.
7. Name the requirements that must be stamped on fertilizer bags according to state law.
8. Classify fertilizers according to ordinary, high analysis, or concentrated.
9. Define dry, liquid, and gas fertilizers.
10. Discuss in a short paragraph what 20-10-10 means according to fertilizer analysis.
11. Match hunger signs of plants with examples of their plant food.
12. Identify the parts of the pH scale and, by reading soil test information, determine if the soil is acid, neutral, or alkaline.
13. Name three ways liming benefits plant growth.

14. Match plants to the most desirable pH scale range.

15. Classify fertilizers according to their percent nutrient value from the highest percent to the lowest.

16. Name four factors to consider in caring for fertilizer equipment.

17. Name three factors to consider in storing fertilizers.

18. Calculate problems comparing the cost per pound of nitrogen for each fertilizer.

19. Demonstrate the ability to secure a soil sample, complete the crop information, have the sample analyzed, and recommend the fertilizer to use and the amount.

FERTILIZERS
UNIT XVII

SUGGESTED ACTIVITIES

I. Instructor:

- A. Provide students with objective sheet.
- B. Provide students with information and assignment sheets.
- C. Make transparencies.
- D. Discuss unit and specific objectives.
- E. Discuss information and assignment sheets.
- F. Arrange field trip to fertilizer dealer or distributor.
- G. Give test.

II. Students:

- A. Read objectives.
- B. Study information sheets.
- C. Work assignment sheets and turn in to instructor for grading.
- D. Participate in field trip.
- E. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

- A. Objectives
- B. Information sheets
- C. Fertilizer Recommendation Guide
- D. Transparency masters
    1. TM 1--Essential Elements
    2. TM 2--Required Fertilizer Bag Information

3. TM 3–Fertilizer Analysis
4. TM 4--pH Scale

E. Assignment sheets

1. Assignment Sheet No. 1–Calculate Cost Per Pound of Nitrogen For Different Fertilizer Analyses
2. Assignment Sheet No. 2--Calculate Application Rates of Fertilizers.
3. Assignment Sheet No. 3--Secure and Analyze Soil Sample

F. Answers to assignment sheets

G. Test

H. Answers to test

II. References:

A. McVickar, Malcolm H. *Using Commercial Fertilizers.* Danville, Illinois: The Interstate Printers and Publishers, Inc.

B. Cook, R. L. *Soil Management.* New York: John Wiley and Sons, Inc.

C. *NebGuide.* Lincoln, Nebraska: Cooperative Extension Service, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln.

D. "Fertilizer Recommendations for Corn." Bulletin Number G 74-174. Cooperative Extension Service, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln, Lincoln, Nebraska.

E. "Fertilizing Soybean Fields." Bulletin Number G 73-1. Cooperative Extension Service, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln, Lincoln, Nebraska.

F. "Fertilizing Grain Sorghum." Bulletin Number G 74-112. Cooperative Extension Service, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln, Lincoln, Nebraska.

G. "How Much Fertilizer on Wheat?" Bulletin Number G 73-37. Cooperative Extension Service, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln, Lincoln, Nebraska.

FERTILIZERS
UNIT XVII

INFORMATION SHEET

I. Terms and definitions

A. Formula--The quantity and grade of materials used in making a fertilizer mixture

B. Fertilizer--Any natural manufactured or processed material or mixture of materials that contains one or more of the recognized plant food elements, either liquid or dry

C. Ratio--The ratio of nitrogen, phosphate, and potash in a fertilizer

D. Grade--The total of the fertilizer analysis

E. Analysis--The percent content of total (N) nitrogen available (P) phosphorus expressed as P_2O_5 and the amount of water soluble (K) potassium expressed as K_2O

F. Brand--Trademark of the company which produced the fertilizer

G. Carrier--A fertilizer containing only one nutrient

H. Complete fertilizer--One which supplies all three of the major nutrients

I. Mixed fertilizer--A mixture of two carriers

J. Filler--The material added for weight to the fertilizer which does not contain N, P_2O_5, or K

K. Conditioner--The material added to the fertilizer in order to improve its physical condition

L. Acid soil--The soil having an acid reaction; the pH is below 7.0

M. Alkali soil--The soil that contains enough exchangeable sodium to adversely affect the growth of most crops

N. Alkaline soil--The soil having a basic reaction; the pH is above 7.0

O. Organic soil--A term used to refer to soils containing 20% or more organic matter

P. pH--A term used to indicate the degree of acidity or alkalinity of the soil

INFORMATION SHEET

Q. Yield possibility--The yield obtained for a given cropping situation when all nutrients are adequate

R. Water solubility–Refers to the percentage of the fertilizer which will be dissolved

S. Percent sufficiency–The percent of the yield possibility obtained because of the deficiency of a plant nutrient

II. Factors influencing use of fertilizers

A. Crops

1. Value
2. Leaching of nitrogen
3. Absorbing ability

B. Chemical condition of soil

1. Availability of total nutrients
2. Availability of nutrients

C. Physical condition of soil

1. Moisture content
2. Soil texture (aeration)

D. Insects and diseases

E. Climatic conditions

III. Essential elements (Transparency 1)

A. Carbon - C

B. Hydrogen - H

C. Oxygen - O

D. Nitrogen - N

E. Phosphorus - P

F. Pottassium - K

G. Calcium - Ca

H. Magnesium - Mg

INFORMATION SHEET

- I. Sulfur - S
- J. Iron - Fe
- K. Zinc - Zn
- L. Manganese - Mn
- M. Copper - Cu
- N. Boron - B
- O. Molybdenum - Mo
- P. Chloride - Cl

IV. Characteristics of major plant nutrients

- A. Nitrogen
  - 1. Part of every living cell
  - 2. Part of the chlorophyl molecule
  - 3. Gives dark green color
  - 4. Aids and promotes seed development
  - 5. Easily translocated
- B. Phosphorus
  - 1. Part of every living cell
  - 2. Contributes to early maturing of crops
  - 3. Necessary for seed formation
  - 4. Stimulates root growth
  - 5. Easily translocated
- C. Potassium
  - 1. Necessary for production and translocation of carbohydrates
  - 2. Aids in respiration
  - 3. Controls water intake and respiration

INFORMATION SHEET

        4. Easily translocated
        5. Promotes health and vigor of plants
        6. Stiffens straw and stalks

V. Characteristics of minor plant nutrients

    A. Calcium
        1. Speeds decay of organic matter
        2. Stimulates formation of nitrates
        3. Promotes root and leaf growth
        4. Necessary for nodulation of legumes

    B. Magnesium
        1. Necessary for chlorophyl or green coloring
        2. Increases absorption of phosphorus
        3. Aids in formation of fats and oils
        4. Important in plant enzyme system

    C. Sulfur
        1. Necessary for nodule formation on legumes
        2. Associated with plant enzyme systems
        3. Easily translocated

VI. Micro-elements

    A. Manganese
    B. Boron
    C. Copper
    D. Zinc
    E. Iron

VII. Fertilizer bag requirements (Transparency 2)

INFORMATION SHEET

A. Name, brand, or trademark

B. Analysis (guaranteed or chemical composition)

C. Net weight

D. Name and address of manufacturer

VIII. Fertilizer classification

A. Ordinary--Less than 20% plant food

B. High analysis--20 to 30% plant food

C. Concentrated--Over 30% plant food

D. Examples

1. 0-20-0 - High
2. 20-20-20 - Concentrated
3. 82-0-0 - Concentrated
4. 5-10-0 - Ordinary

IX. Fertilizers

A. Dry mixed--A granulated fertilizer made by combining selected plant food materials to obtain certain ratios and quantities of plant nutrients

B. Liquid--A liquid fertilizer made by dissolving the correct proportion of the solid plant food carriers into water or by the neutralization process of neutralizing phosphoric acid with ammonia

C. Gas--A liquid fertilizer containing solid fertilizer materials which is dispersed under pressure and usually contains a higher analysis than clear liquid mixes

X. Fertilizer analysis (Transparency 3)

A. Consists of three figures

(NOTE: These three figures indicate the plant nutrient content of the material.)

B. First figure--Represents pounds of total nitrogen available in 100 pounds of fertilizer

INFORMATION SHEET

C. Second figure--Represents pounds of total phosphorus available expressed as P_2O_5

D. Third figure--Represents pounds of water soluble potash expressed as K_2O

E. Example--100 pounds of 20-10-10 fertilizer

1. 20 pounds of total nitrogen
2. 10 pounds of available phosphate
3. 10 pounds of water soluble potash

XI. Hunger signs of plants

A. Nitrogen

1. Stunted and spindly
2. Yellowish-green foliage
3. Older leaves affected first
4. Leaf margins remain green

B. Phosphorus

1. Stunted growth
2. Abnormally green appearance
3. Leaves become purple in advanced stages
4. Older leaves affected first

C. Potassium

1. Shorter plants
2. General loss of green color
3. Leaf margins affected first

D. Magnesium

1. General yellowing
2. Older leaves affected first

INFORMATION SHEET

  3. Leaves become reddish-purple in advanced stages, especially leaf edges
  4. Veins remain green
  5. Leaves may curl downward

XII. pH scale (Transparency 4)

  A. Acid - 0 to 6.9

  B. Neutral - 7.0

  C. Alkaline - 7.1 to 14.0

  (NOTE: The pH scale is divided into 14 divisions, or pH units. Soils with a pH value of 7.0 are neutral; those with a value below 7.0 are said to be acid, while those above 7.0 are alkaline. A pH of 5.0 is 10 times more acid than a pH of 6.0, and a pH of 4.0 is 10 times as acid as pH 5.0, or 100 times as acid as one with a pH of 6.0. The pH value of most soils falls in the range between 4.0 and 8.0. A pH of about 6.5 is considered desirable for most plants.)

XIII. Liming effects on plant growth

  A. Corrects soil acidity

  B. Reduces solubility of toxic elements

  C. Supplies calcium and magnesium

  D. Improves biological activity

  E. Improves physical condition of soil

  F. Makes fertilizers more effective and efficient

  G. Improves yields

XIV. Desirable plant pH scale

  A. Strongly acid 5.0 to 5.5

    1. Potatoes
    2. Watermelons

  B. Medium and moderately acid 5.5 to 6.5

INFORMATION SHEET

1. Soybean
2. Corn
3. Wheat
4. Sorghum
5. Vetch
6. Oats
7. Rye
8. Millet
9. Sudangrass
10. Cotton
11. Peanuts
12. Bermudagrass

C. Slightly acid - slightly alkaline 6.5 to 7.5

1. Alfalfa
2. Sweet clover

XV. Fertilizer nutrient value classification

A. Nitrogen

1. Anhydrous ammonia 82% 82-0-0 grade
2. Urea 45% 45-0-0 grade
3. Ammonia nitrate 33% 33-0-0 grade
4. Ammonia sulfate 21% 21-0-0 grade
5. Urian 28% 28-0-0 grade

B. Phosphate

1. Phosphoric acid 50-54% 0-54-0 grade
2. Cons. Superphosphate 44-48% 0-45-0 grade

INFORMATION SHEET

    3. Ammonium phosphate 35-50% 18-46-0 grade
    4. Rock phosphate 30-34%
    5. Nitric phosphate 10-20% many grades

  C. Potash (Potassium)

    1. Muriate of potash 60-63% 0-0-60 grade
    2. Potassium sulfate 50-53% 0-0-50 grade
    3. Potassium nitrate 44-46% 13-0-44 grade

XVI. Care of fertilizer equipment

  A. Remove all fertilizer from hopper after use

  B. Clean hopper thoroughly with water

  C. Allow hopper to dry

  D. Apply a mixture of 50% kerosene to hopper

XVII. Storage of fertilizer

  A. Store in a dry location

  B. Do not stack in direct contact with walls

  C. Do not stack directly on concrete floor

  (NOTE: If storage location has a concrete floor, use lumber and construct a false floor.)

XVIII. Calculating cost of nitrogen

  A. Multiply percent nitrogen x 2000 lbs/per ton

  B. Divide pounds of nitrogen in one ton into the cost per ton

  C. Example ($68.00 per ton)

33.0% nitrogen in 100 pounds
x 20 100-pound bags in a ton
660.0 pounds of nitrogen in one ton

$$\begin{array}{r} .1030 \\ 660\overline{)68.00} \end{array} = 10.3 \text{ cents per pound}$$

INFORMATION SHEET

XIX. Calculating application rates

A. Determine pounds of nutrient needed

B. Divide by percent of nutrient in fertilizer

C. Example

$$\frac{\text{40 lbs. of } K_2O \text{ needed}}{\text{50 percent } K_2O \text{ in fertilizer}} = \text{80 lbs. of 0-0-50 needed per acre}$$

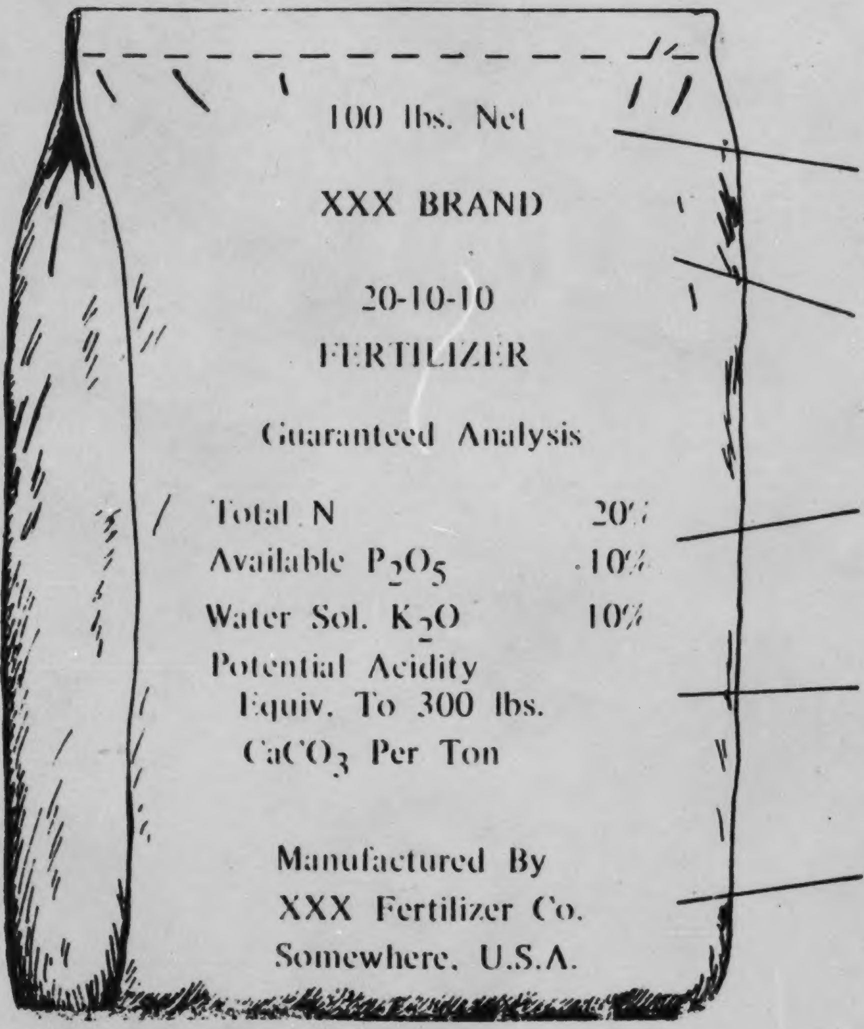
Essential Elements

NON-MINERAL	PRIMARY	SECONDARY
Carbon	Nitrogen	Calcium
Hydrogen	Phosphorus	Magnesium
Oxygen	Potassium	Sulfur

MICRO-ELEMENTS

Iron	Boron	Zinc
Chloride		Copper
Manganese		Molybdenum

Required Fertilizer Bag Information


100 lbs. Net
XXX BRAND
20-10-10
FERTILIZER
Guaranteed Analysis
Total N 20%
Available P_2O_5 10%
Water Sol. K_2O 10%
Potential Acidity
Equiv. To 300 lbs.
$CaCO_3$ Per Ton
Manufactured By
XXX Fertilizer Co.
Somewhere, U.S.A.

Lbs. per Bag

Name or Brand of Fertilizer

Chemical Composition Guaranteed

Acid Forming Tendency

Name and Address of Manufacturer

Fertilizer Analysis

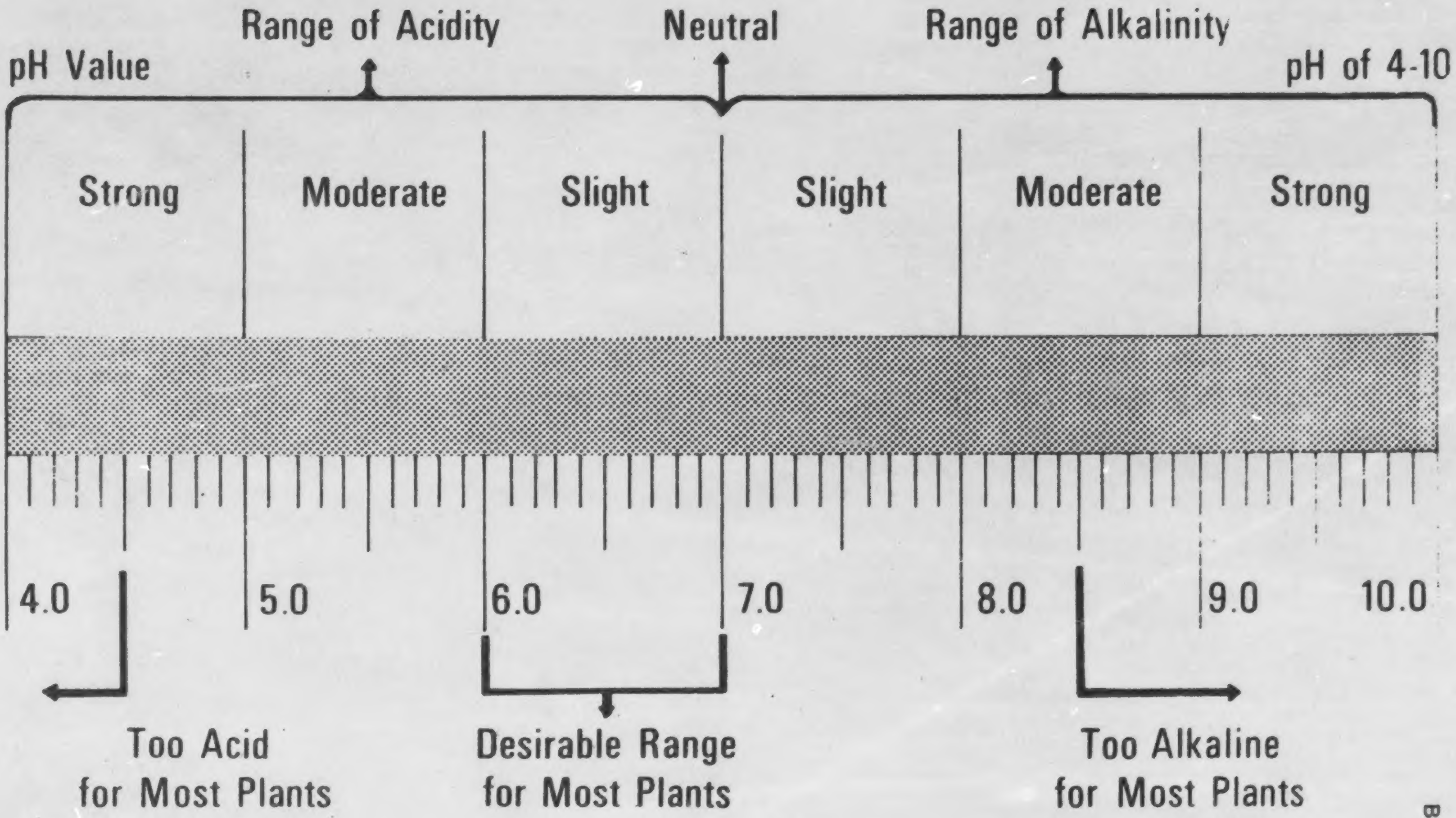
20 – 10 – 10

↑ Total Nitrogen Available

↑ Total Phosphorus Expressed as P_2O_5

↑ Water Soluble Potash Expressed as K_2O

pH Scale


Range of Acidity
Neutral
Range of Alkalinity
pH Value
pH of 4-10
Strong
Moderate
Slight
Slight
Moderate
Strong
4.0
5.0
6.0
7.0
8.0
9.0
10.0
Too Acid for Most Plants
Desirable Range for Most Plants
Too Alkaline for Most Plants

FERTILIZERS
UNIT XVII

ASSIGNMENT SHEET NO. 1--CALCULATE COST PER POUND OF NITROGEN FOR DIFFERENT FERTILIZER ANALYSES

Compare the cost per pound of actual nitrogen for each fertilizer. When you have completed the problems, turn in to your instructor for evaluation. Ask instructor for the local price per ton of each analysis.

1. Ammonium nitrate 33.0% Local price per ton ____________

2. Anhydrous ammonia 82% Local price per ton ____________

ASSIGNMENT SHEET NO. 1
Continued

3. Urea 45% Local price per ton ____________

4. Ammonium sulfate 21% Local price per ton ____________

FERTILIZERS
UNIT XVII

ASSIGNMENT SHEET NO. 2--CALCULATE APPLICATION RATES OF FERTILIZERS

Calculate the amount of nutrients needed using the different fertilizer analyses. When completed return to instructor for his/her evaluation.

1. A farmer desires to plant wheat with a 0-20-0 analysis at a rate of 100 lbs. per acre. How many pounds of fertilizer would be needed?

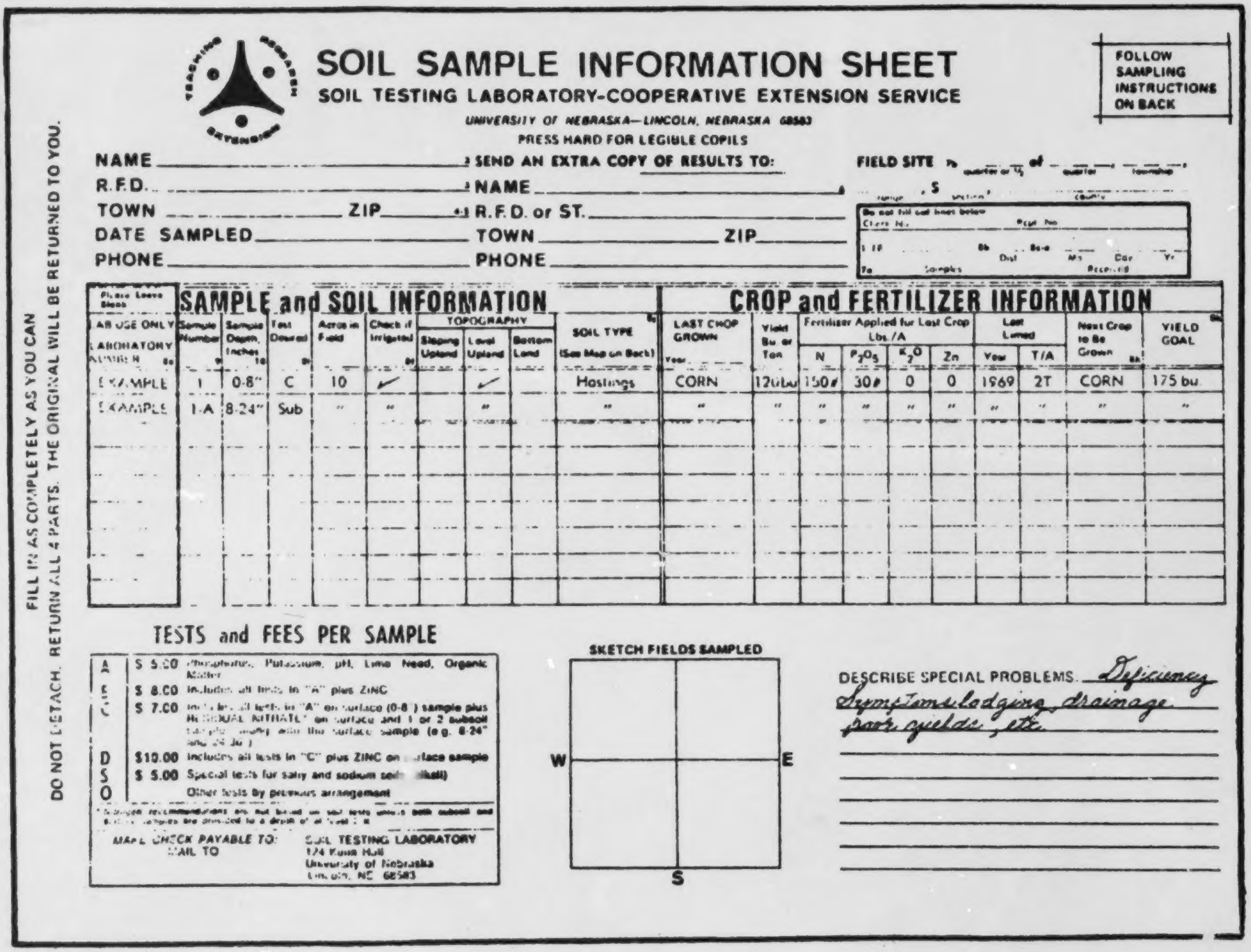
2. How many pounds of 0-0-60 would be needed to apply 40 lbs. of K_2O per acre?

3. How many pounds of 82-0-0 would be needed to apply 100 lbs. of N per acre?

FERTILIZERS
UNIT XVII

ASSIGNMENT SHEET NO. 3--SECURE AND ANALYZE SOIL SAMPLE

Secure a soil sample and answer the necessary information concerning the crop to be grown and the cropping history of the plot. Have the sample analyzed and recommend the fertilizer to use and the amount. When completed return to instructor for his/her evaluation and discussion purposes.



FOLLOW SAMPLING INSTRUCTIONS ON BACK

SOIL SAMPLE INFORMATION SHEET

SOIL TESTING LABORATORY-COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF NEBRASKA—LINCOLN, NEBRASKA 68583
PRESS HARD FOR LEGIBLE COPIES

NAME ____________________
R.F.D. ____________________
TOWN ______________ ZIP ________
DATE SAMPLED ____________________
PHONE ____________________

SEND AN EXTRA COPY OF RESULTS TO:
NAME ____________________
R.F.D. or ST. ____________________
TOWN ______________ ZIP ________
PHONE ____________________

FIELD SITE ______ quarter or ½ of ______ quarter ______ township
______ range, S ______ section ______ county

Do not fill out lines below
Check No. ______ Rcpt. No. ______
Samples ______ Received ______ Mo. ______ Day ______ Yr. ______

SAMPLE and SOIL INFORMATION / **CROP and FERTILIZER INFORMATION**

Please Leave Blank LAB USE ONLY LABORATORY NUMBER	Sample Number	Sample Depth, Inches	Test Desired	Acres in Field	Check if Irrigated	TOPOGRAPHY Sloping Upland	TOPOGRAPHY Level Upland	TOPOGRAPHY Bottom Land	SOIL TYPE (See Map on Back)	LAST CROP GROWN Year	Yield Bu. or Ton	Fertilizer Applied for Last Crop Lbs./A N	P_2O_5	K_2O	Zn	Last Limed Year	Last Limed T/A	Next Crop to Be Grown	YIELD GOAL
EXAMPLE	1	0-8"	C	10	✓		✓		Hastings	CORN	120bu	150#	30#	0	0	1969	2T	CORN	175 bu.
EXAMPLE	1-A	8-24"	Sub	"	"		"		"	"	"	"	"	"	"	"	"	"	"

TESTS and FEES PER SAMPLE

A	$ 5.00	Phosphorus, Potassium, pH, Lime Need, Organic Matter
B	$ 8.00	Includes all tests in "A" plus ZINC
C	$ 7.00	Includes all tests in "A" on surface (0-8") sample plus RESIDUAL NITRATE* on surface and 1 or 2 subsoil samples along with the surface sample (e.g. 8-24" and 24-36")
D	$10.00	Includes all tests in "C" plus ZINC on surface sample
S	$ 5.00	Special tests for salty and sodium soils (alkali)
O		Other tests by previous arrangement

*Nitrogen recommendations are not based on soil tests unless both subsoil and surface samples are provided to a depth of at least 2 ft.

MAKE CHECK PAYABLE TO: MAIL TO
SOIL TESTING LABORATORY
124 Keim Hall
University of Nebraska
Lincoln, NE 68583

SKETCH FIELDS SAMPLED

W E S

DESCRIBE SPECIAL PROBLEMS. Deficiency Symptoms, lodging, drainage poor yields, etc.

FILL IN AS COMPLETELY AS YOU CAN
DO NOT DETACH. RETURN ALL 4 PARTS. THE ORIGINAL WILL BE RETURNED TO YOU.

(Note: The form found on this page has been photo reduced for use as a student worksheet only. Actual form may be obtained from the local County Extension Office or from the Soil Testing Laboratory, 124 Keim Hall, University of Nebraska-Lincoln, Lincoln, Nebraska 68583.)

B-543-B

FERTILIZERS
UNIT XVII

TEST

1. Match the terms on the left to the correct definition.

_____a. A term used to indicate the degree of acidity or alkalinity of the soil

_____b. A mixture of two carriers

_____c. The quantity and grade of materials used in making a fertilizer mixture

_____d. A term used to refer to soils containing 20% or more organic matter

_____e. The material added for weight to the fertilizer which does not contain N, P_2O_5, or K

_____f. Any natural manufactured or processed material or mixture of materials that contains one or more of the recognized plant food elements, either liquid or dry

_____g. The soil having a basic reaction; the pH is above 7.0

_____h. The ratio of nitrogen, phosphate, and potash in a fertilizer

_____i. The soil that contains enough exchangeable sodium to adversely affect the growth of most crops

_____j. The total of the fertilizer analysis

_____k. The soil having an acid reaction; the pH is below 7.0

1. Acid soil
2. Alkali soil
3. Conditioner
4. Formula
5. pH
6. Fertilizer
7. Alkaline soil
8. Ratio
9. Organic soil
10. Grade
11. Yield possibility
12. Analysis
13. Complete fertilizer
14. Mixed fertilizer
15. Percent sufficiency
16. Filler
17. Brand
18. Carrier

_____l. The percent of content of total (N) nitrogen available (P) phosphorus expressed as P_2O_5 and the amount of water soluble (K) potassium expressed as K_2O

_____m. The material added to the fertilizer in order to improve its physical condition

_____n. The trademark of the company which produced the fertilizer

_____o. The material added to the fertilizer which does not contain N, P_2O_5, or K

_____p. The yield obtained for a given cropping situation when all nutrients are adequate

_____q. A fertilizer containing only one nutrient

_____r. The percent of the yield possibility obtained because of the deficiency of a plant nutrient

_____s. One which supplies all three of the major nutrients

2. Name five factors that influence the use of fertilizers.

a.

b.

c.

d.

e.

3. Name the sixteen elements known to be essential for plant growth and name the correct chemical symbol for each.

a.___________ Symbol___________

b.___________ Symbol___________

c.__________ Symbol__________

d.__________ Symbol__________

e.__________ Symbol__________

f.__________ Symbol__________

g.__________ Symbol__________

h.__________ Symbol__________

i.__________ Symbol__________

j.__________ Symbol__________

k.__________ Symbol__________

l.__________ Symbol__________

m.__________ Symbol__________

n.__________ Symbol__________

o.__________ Symbol__________

p.__________ Symbol__________

4. Name the three major (primary) plant nutrients and name three characteristic. of each.

a.____________________ Characteristics: ____________________

____

____

b.____________________ Characteristics: ____________________

____

____

c.____________________ Characteristics: ____________________

____

____

5. Name three minor (secondary) plant nutrients and name three characteristics of each.

a. ____________ Characteristics: ____________

____

____

b. ____________ Characteristics: ____________

____

____

c. ____________ Characteristics: ____________

____

____

6. Name three micro-elements necessary for plant growth which are usually found in sufficient quantity in most soils.

a.

b.

c.

7. Name the four requirements that must be stamped on fertilizer bags according to state law.

a.

b.

c.

d.

8. Classify the following fertilizers according to ordinary, high analysis, or concentrated.

a. 10-20-10 ____________

b. 5-10-0 ____________

c. 82-0-0 ____________

d. 16-20-0 ____________

9. Define the following.

   a. Dry mixed fertilizer--

   b. Liquid fertilizer--

   c. Gas fertilizer--

10. Discuss in a short paragraph what 20-10-10 means according to fertilizer analysis.

11. Match the hunger signs of plants on the right to examples of their plant food.

_____a. Phosphorus

_____b. Nitrogen

_____c. Magnesium

_____d. Potassium

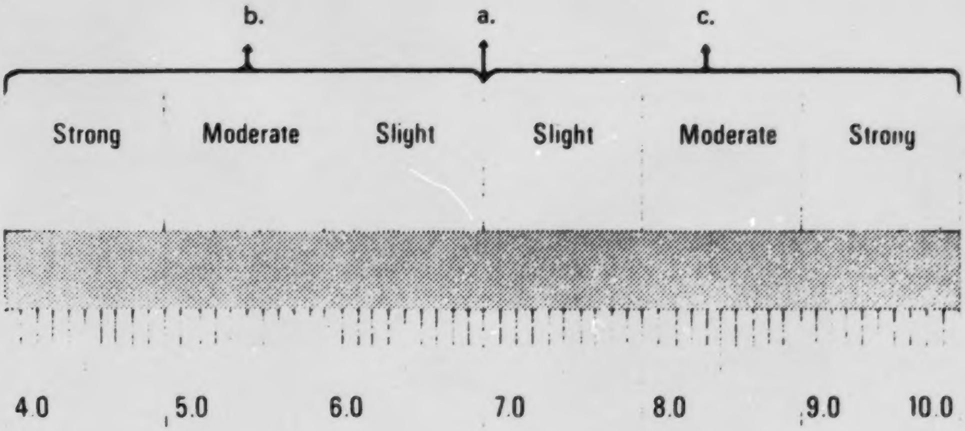
1. Plants stunted and spindly, yellowish-green foliage, older leaves affected first, and leaf margins remain green

2. Stunted growth, abnormally green appearance, leaves become purple in advanced stages, and older leaves are affected first

3. Plants show general yellowing, older leaves affected first, leaves become reddish-purple in advanced stages, veins remain green, and leaves may curl downward

4. Short plants, general loss of green color, and leaf margins affected first

12. Identify the following parts of the pH scale. Use the information given below and the scale and determine if the soil is acid or alkaline.


b.
a.
c.
Strong
Moderate
Slight
Slight
Moderate
Strong
4.0
5.0
6.0
7.0
8.0
9.0
10.0

a.____

b.____

c.____

Suppose you were growing the following crops and soil test information was available on each field. Using the pH scale given, determine if the soil is acid, neutral, or alkaline.

d. Alfalfa soil test 5.5 ____________________________

e. Corn soil test 7.2 ____________________________

f. Wheat soil test 7.0 ____________________________

g. Sorghum soil test 8.2 ____________________________

13. Name three ways liming benefits plant growth.

a.

b.

c.

14. Match the plants on the right to the most desirable pH scale range.

_____a. Oats	1. Strong acidity 5.0 to 5.5
_____b. Corn	2. Medium to moderate acid 5.5 - 6.5
_____c. Alfalfa	3. Slightly acid to slightly alkaline 6.5 to 7.5
_____d. Watermelons	
_____e. Sudangrass	
_____f. Cotton	
_____g. Sorghum	

15. Classify the following fertilizers according to their percent nutrient value from the highest percent to the lowest. Place the percent in the blank provided.

a. Nitrogen

_____Ammonia sulfate

_____Anhydrous ammonia

_____Urea

_____Ammonia nitrate

b. Phosphate

_____Phosphoric acid

_____Rock phosphate

_____Nitric phosphate

_____Cons. superphosphate

_____Ammonium phosphate

c. Potash

_____Potassium sulfate

_____Potassium nitrate

_____Muriate of potash

16. Name four factors to consider in caring for fertilizer equipment.

    a.

    b.

    c.

    d.

17. Name three factors to consider in storing fertilizers.

    a.

    b.

    c.

18. Work the following nitrogen problems.

    a. Suppose you were using ammonium nitrate which is 33.0 percent nitrogen and cost $68.00 per ton. What would it cost you per pound?

    b. Suppose you were using anhydrous ammonia which is 82.0 percent nitrogen and cost $85.00 per ton. What would it cost you per pound?

19. Demonstrate the ability to secure a soil sample, complete the crop information, have the sample analyzed, and recommend the fertilizer to use and the amount.

FERTILIZERS
UNIT XVII

ANSWERS TO TEST

1. 5 a.

   14 b.

   4 c.

   9 d.

   16 e.

   6 f.

   7 g.

   8 h.

   2 i.

   10 j.

   1 k.

   12 l.

   3 m.

   17 n.

   16 o.

   11 p.

   18 q.

   15 r.

   13 s.

2. a. Crops

   b. Chemical condition of soil

   c. Physical condition of soil

   d. Insects and diseases

   e. Climatic conditions

3.	a.	Hydrogen	Symbol	H
	b.	Oxygen	Symbol	O
	c.	Carbon	Symbol	C
	d.	Nitrogen	Symbol	N
	e.	Phosphorus	Symbol	P
	f.	Potassium	Symbol	K
	g.	Calcium	Symbol	Ca
	h.	Magnesium	Symbol	Mg
	i.	Sulfur	Symbol	S
	j.	Iron	Symbol	Fe
	k.	Zinc	Symbol	Zn
	l.	Manganese	Symbol	Mn
	m.	Copper	Symbol	Cu
	n.	Boron	Symbol	B
	o.	Molybdenum	Symbol	Mo
	p.	Chloride	Symbol	Cl

4. a. Nitrogen — Any three of the following characteristics:

Part of every living cell
Part of the chlorophyl molecule
Gives dark green color
Aids and promotes seed development
Easily translocated

b. Phosphorus — Any three of the following characteristics:

Part of every living cell
Contributes to early maturing of crops
Necessary for seed formation
Stimulates root growth
Easily translocated

c. Potassium — Any three of the following characteristics:

Necessary for production and translocation of carbohydrates

Aids in respiration
Controls water intake and respiration
Easily translocated
Promotes health and vigor of plants
Stiffens straw and stalks

5. a. Calcium — Any three of the following characteristics:

Speeds decay of organic matter
Stimulates formation of nitrates
Promotes root and leaf growth
Necessary for nodulation of legumes

b. Magnesium — Any three of the following characteristics:

Necessary for chlorophyl or green coloring
Increases absorption of phosphorus
Aids in formation of fats and oils
Important in plant enzyme system

c. Sulfur — The following characteristics:

Necessary for nodule formation on legumes
Associated with plant enzymes systems
Easily translocated

6. Any three of the following:

a. Manganese

b. Boron

c. Copper

d. Zinc

e. Iron

7. a. Name, brand, or trademark

b. Analysis

c. Net weight

d. Name and address of manufacturer

8. a. Concentrated

b. High

c. Concentrated

d. Concentrated

9. a. A granulated fertilizer made by combining selected plant food materials to obtain certain ratios and quantities of plant nutrients

b. A liquid fertilizer made by dissolving the correct proportion of the solid plant food carriers into water or by the neutralization process of neutralizing phosphoric acid with ammonia

c. A liquid fertilizer containing solid fertilizer materials which are dispersed under pressure and usually contains a higher analysis than clear liquid mixes

10. Discussion should include the following statements:

a. Consists of three figures

b. First figure represents pounds of total nitrogen available in 100 pounds of fertilizer

c. Second figure represents pounds of total phosphorus available expressed as P_2O_5

d. Third figure represents pounds of water soluble potash expressed as K_2O

11. __2__ a.

__1__ b.

__4__ c.

__3__ d.

12. a. Neutral

b. Acid

c. Alkaline

d. Acid

e. Alkaline

f. Neutral

g. Alkaline

13. Any three of the following:

a. Corrects soil acidity

b. Reduces solubility of toxic elements

- c. Supplies calcium and magnesium
- d. Improves biological activity
- e. Improves physical condition of soil
- f. Makes fertilizers more effective and efficient
- g. Improves yields

14. __2__ a.

__2__ b.

__3__ c.

__1__ d.

__2__ e.

__2__ f.

__2__ g.

15. a. Nitrogen

    21% Ammonia sulfate

    82% Anhydrous ammonia

    45% Urea

    33% Ammonia nitrate

    b. Phosphate

    50-54% Phosphoric acid

    30-34% Rock phosphate

    10-20% Nitric phosphate

    44-48% Conc. superphosphate

    35-50% Ammonium phosphate

    c. Potash

    50-53% Potassium sulfate

    44-46% Potassium nitrate

60-63% Muriate of potash

16. a. Remove all fertilizer from hopper after use

    b. Clean hopper thoroughly with water

    c. Allow hopper to dry

    d. Apply a mixture of 50% kerosene to hopper

17. a. Store in dry location

    b. Do not stack in direct contact with walls

    c. Do not stack directly on concrete floor

18. a. 10.3 cents per pound

    b. 5.1 cents per pound

19. Performance skills will be evaluated by the instructor.

PLANT PROPAGATION
UNIT XVIII

UNIT OBJECTIVE

After completion of this unit, the student should be able to distinguish between advantages and disadvantages of propagation by layerage, match different kinds of layerage to their descriptions and demonstrate in the laboratory and/or in the field how to perform the various types of layerage. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, student should be able to:

1. Distinguish between advantages and disadvantages of propagation by layerage.
2. Match kinds of layerage to the correct descriptions.
3. List two points to consider when transplanting layerage plants.
4. Demonstrate the ability to:
    - a. Propagate by tip layerage.
    - b. Propagate by simple layerage.
    - c. Propagate by air layerage.

PLANT PROPAGATION
UNIT XVIII

SUGGESTED ACTIVITIES

I. Instructor:

   A. Provide students with objective sheet.

   B. Provide students with information and job sheets.

   C. Discuss unit and specific objectives.

   D. Discuss information and job sheets.

   E. Demonstrate and discuss procedures outlined in the job sheets.

   F. Give test.

II. Students:

   A. Read objectives.

   B. Study information sheets.

   C. Demonstrate the ability to accomplish the procedures outlined in the job sheets.

   D. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

   A. Objective sheet

   B. Information sheets

   C. Job sheets

      1. Job Sheet #1—Propagate by Tip Layerage

      2. Job Sheet #2—Propagate by Simple Layerage

      3. Job Sheet #3—Propagate by Air Layerage

   D. Test

   E. Answers to test

II. References:

A. Hartman, H. T., and Kester, D. E. *Plant Propagation: Principles and Practices:* Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1974.

B. *Garden Seed Product Information Manual.* Downers Grove, Illinois: Vaughn's Seed Company, 1974.

PLANT PROPAGATION
UNIT XVIII

INFORMATION SHEET

I. Propagation by layerage

  A. Advantages

    1. Relatively dependable method of inducing rooting

    2. Commonly used to propagate plants which are difficult to root

  B. Disadvantages

    1. Relatively expensive method of propagating

    2. Generally does not lend itself to the production of large number of plants

II. Kinds of Layerage

  A. Ground Layerage

    1. Tip—Late August, early September; tip of a branch is placed into one or two inches of soil and allowed to root

       Examples: Trailing blackberries, dewberries, black and purple raspberries

    2. Simple—Early spring using dormant one-year-old shoots; portion of stem is buried from three to six inches deep, leaving the growing tip exposed, and allowed to root

    3. Compound or serpentine—Summertime; stem is alternately covered and exposed, allowing it to root in more than one place

       Examples: Wisteria, clematis, ivy, philodendron

    4. Trench—Winter; entire plant (except the terminal tip) is bent over and covered

    5. Mound—Winter; cutting back the stems of the plant during the nongrowing season and covering the young stems with a mound of soil; in the spring stems have rooted and are removed to make new plants

INFORMATION SHEET

Examples: Currants, gooseberries, certain ornamental shrubs, quinces

B. Above ground layerage—Air—Spring and summer; moist rooting medium is placed around a previously prepared point on the limb and kept in place until roots develop

Examples: Croton, hibiscus, dracaena, rubber plant

III. Transplanting layerage plants

A. Prune vegetative growth so that its size stays in relation to size of new roots

B. Remove plant from parent plant and handle the same as a rooted cutting

PLANT PROPAGATION
UNIT XVIII

JOB SHEET #1—PROPAGATE BY TIP LAYERAGE

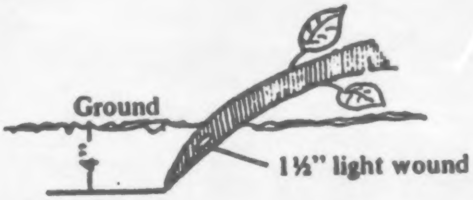
I. Equipment

- A. Healthy, mature, red raspberry bush
- B. Round point spade
- C. One 12 inch piece of number 9 wire
- D. Some rooting hormone
- E. Some horticulture peat
- F. Dibble stick

II. Procedure

(NOTE: This job should be done at the start of the growing season.)

- A. Select a healthy, mature, red raspberry bush (2 or 3 yrs. old) that has at least one one-year-old whip that is flexible and several feet long
- B. Bend this one-year-old whip to the ground in a fashion that will not cause undue strain on any part of the plant (Figure 1)



- C. Locate the general area where whip's tip will touch ground; in the place where the tip of the whip touches the ground, prepare the ground for making a tip layer

D. Spade up an area approximately 2′ × 2′ and at least 10 inches deep where the tip will be placed in the ground

E. Take several handsful of peat and work it into the top 6 or 7 inches of the loosened ground

(NOTE: Heavy clay soils may need more peat than others. The peat is used to keep the soil loose and to hold moisture.)

F. With a dibble stick, poke a hole in the prepared soil, allowing you to insert tip of whip about 4 inches into ground

G. Make the light wound one-and-a-half inches long about one inch from the tip of the whip (Figure 1)

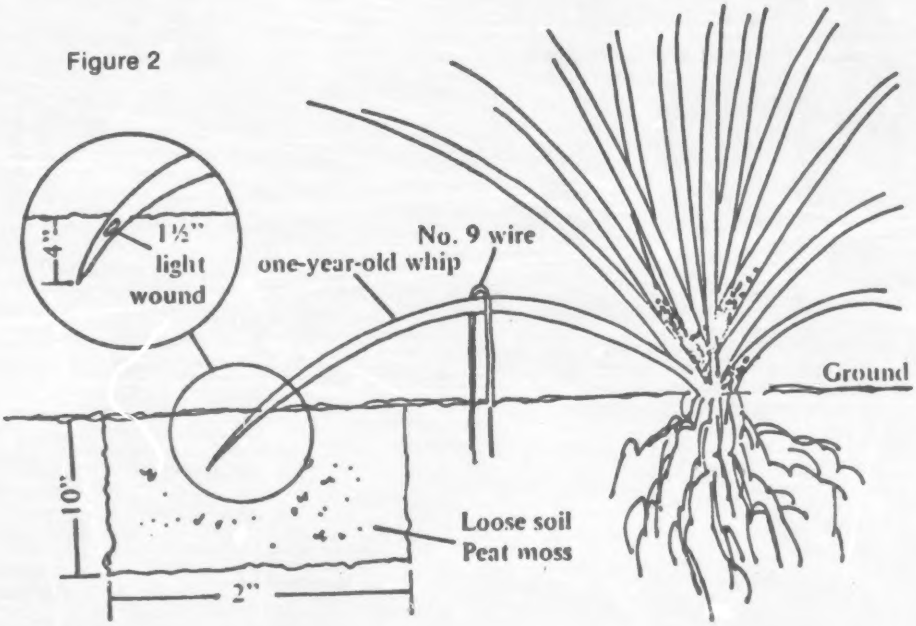
H. Dip the tip into a rooting hormone so that the entire wound is treated

I. Place tip in hole made by dibble stick and firm pack soil around it to keep it in soil

J. Bend a 12-inch piece of number 9 wire into a narrow horse-shoe shape and force it into ground over stem about 12 to 18 inches from where tip is inserted (Figure 2)

(NOTE: The wire is only to keep the whip from pulling out of the ground. Do not put too much pressure on the whip with this wire. It should not cause any damage to the whip.)

Figure 2



K. Water tip layer to settle soil in well around layer for good soil contact

L. At the end of the growing season the layers should be well rooted; at this time cut them from the mother plant, just an inch above where they enter the ground

M. In the spring when the new layered plants start to grow well (several mature leaves) dig them up and transplant them

PLANT PROPAGATION
UNIT XVIII

JOB SHEET #2— PROPAGATE BY SIMPLE LAYERAGE

I. Equipment

A. Healthy, mature, red raspberry bush

B. Round point spade

C. 12-inch piece of No. 9 wire

D. Two-foot lath stake

E. Some twine

F. Sharp knife

G. Some rooting hormone

H. Some horticultural peat

I. Hammer

J. Brick

II. Procedure

(NOTE: This job should be done at the start of the growing season.)

A. Select a healthy, mature, red raspberry bush (2 or 3 years old) that has at least one one-year-old whip that is flexible and several feet long

B. Bend this one-year-old whip to the ground and locate a spot about 2 feet from its end where the ground will be prepared

C. Spade up an area 2′ × 2′ and at least 10 inches deep where whip will be placed in ground

D. Take several handfuls of peat and work it into the top 6 or 7 inches of the loosened ground

(NOTE: Heavy clay soils may need more peat then others. The peat is used to keep the soil loose and to hold moisture.)

E. Dig out a narrow trench about 12 inches long and 6 inches deep as wide as your hand

(NOTE: This is best done with your hands.)

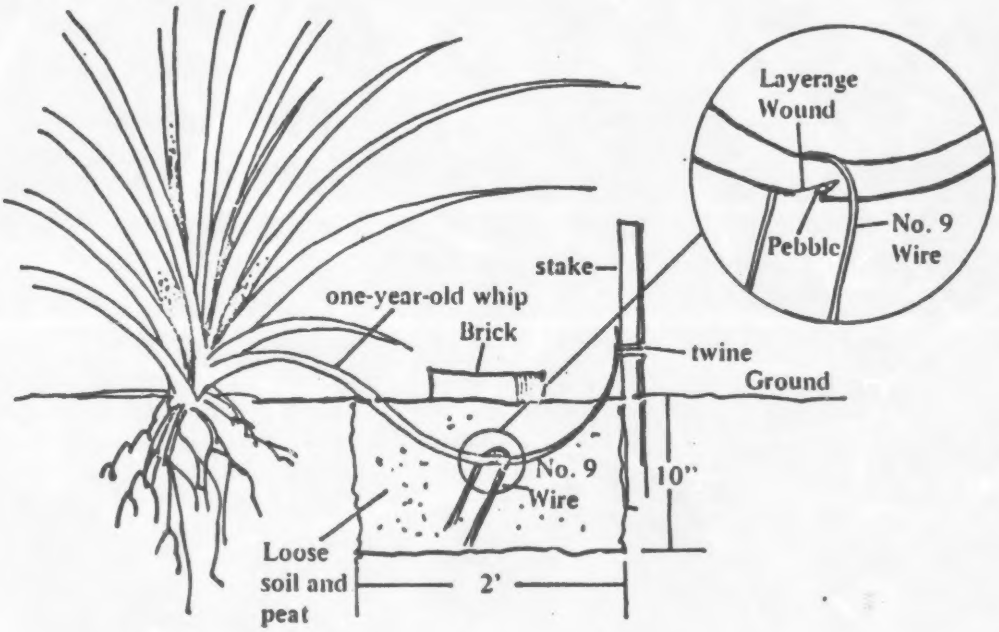
F. Locate the part of the whip which will be laid in this trench; At the point on the whip that is in the middle of the trench, make a layerage wound about ⅓ to ½ of the thickness of the stem

G. Insert a small pebble in the wound to keep it open and sprinkle the wound with rooting hormone

(CAUTION: Care needs to be taken when placing the stem in the ground so that the pebble remains in the wound. Otherwise, the wound may seal over and rooting will not take place.)

H. Bend a 12-inch piece of No. 9 wire into a narrow horseshoe shape and force it into the ground across the whip so that the wounded area is held firmly in the bottom of the trench (Figure 1)

(NOTE: Be sure the pebble does not fall out of the wound.)


Layerage Wound
Pebble
No. 9 Wire
stake
one-year-old whip
Brick
twine
Ground
No. 9 Wire
10"
Loose soil and peat
2'

I. Fill in the trench with the soil-peat mixture which you removed with your hands earlier, and tamp it with your foot

J. Place a brick on the soil directly above the layered section

(NOTE: Approximately a foot of the end of the whip should now remain above ground. See Figure 1.)

K. Place a lath stake beside the end of this whip and, with some twine, tie up the tip in an upright position

L. Soak the layered portion of the whip with a bucket of water

(NOTE: This will settle the soil around the buried whip section to give good whip-soil contact.)

M. At the end of the growing season, the layers should be well rooted; at this time cut them from the mother plant, just an inch above where they enter the ground

N. In the spring when the newly layered plants start to grow well, dig them up and transplant them

PLANT PROPAGATION
UNIT XVIII
JOB SHEET #3—PROPAGATE BY AIR LAYERAGE

I. Equipment

A. Healthy, mature tomato plant

B. Sharp knife

C. Some sphagnum moss

D. Clear polyethylene, 8 " × 12" sheet

E. Some twine

F. Rooting hormone

G. Match stick, ½" length

II. Procedure

A. Select a mature, healthy tomato plant

B. Choose a branch near the middle of the plant that is at least ¼ inch in diameter and at least a foot long

C. Choose a place below a node which is about 8 to 10 inches from the tip of the branch and carefully remove all of the leaves for 4 inches on both sides of this node

D. Make a layerage wound about an inch below a node

E. Soak two handfuls of sphagnum moss in water and squeeze it out so it is just damp

F. Treat the wounded area with a rooting hormone

G. Insert a one-half length of match stick in the base of the wound to keep it held open (Figure 1)

H. Now place the damp moss around the entire wounded area

(NOTE: You may need another student to help you at this point. The moss should form a ball over the wounded area.)

I. Carefully wrap the 8 × 12 inch plastic sheet around the moss and tie it tightly at both ends to prevent any moisture from escaping (Figure 2)

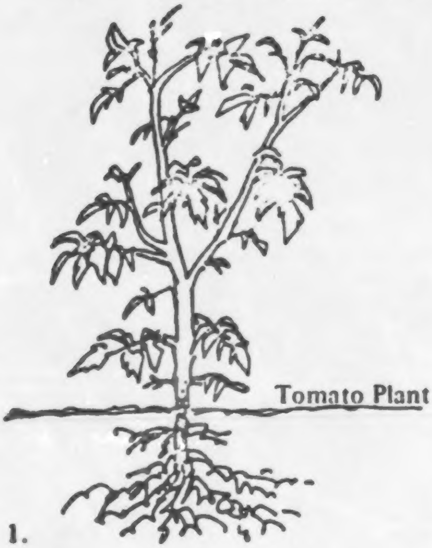
(NOTE: Be careful not to damage the stem.)

J. Place the tomato plant in the greenhouse for a period of about 10 days or until you can see roots appearing through the moss to the plastic

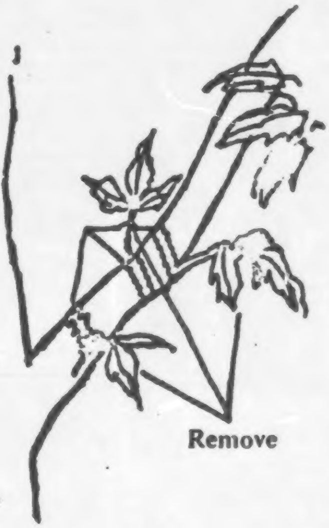
K. When roots appear, remove the plastic sheet, but allow what moss that wants to cling to the roots to do so

L. Remove the branch from the mother plant with a 45 angle cut just below the lowest roots that have formed

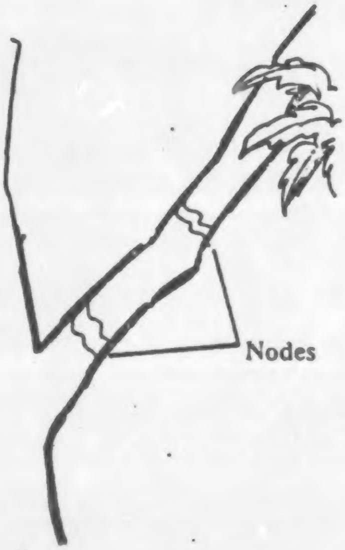
M. Transplant the branch and what moss remains on it


Tomato Plant

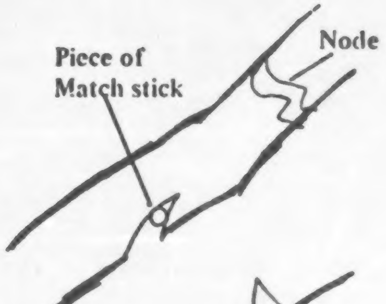
1.



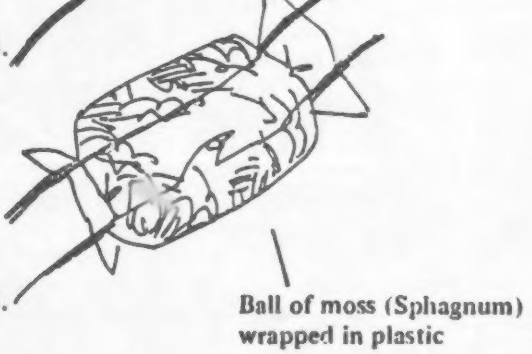
2.



3.


Piece of
Match stick
Node

4.


Ball of moss (Sphagnum)
wrapped in plastic

5.

PLANT PROPAGATION
UNIT XVIII

TEST

1. Distinguish between advantages and disadvantages of propagation of propagation by layerage by placing an A by the advantage and a D by the disadvantages.

____ a. Relatively dependable method of inducing rooting

____ b. Relatively expensive method of propagating

____ c. Generally does not lend itself to the production of large number of plants

____ d. Commonly used to propagate plants which are difficult to root

2. Match kinds of layerage on the right to the correct description.

____ a. Late August, early September tip of a branch is placed into one or two inches of soil and allowed to root

____ b. Summertime stem is alternately covered and exposed, allowing it to root in more than one place.

____ c. Winter cutting back the stems of the plant during the non growing season and covering the young stem with a mound of soil; in the spring stems have rooted and are removed to make new plants

____ d. Early spring using dormant one year old shoots a portion of stem is buried from three to six inches deep, leaving the growing tip exposed and allowed to root

____ e. Winter entire plant is bent over and covered

____ f. Spring and summer moist medium is placed around a previously prepared point on the limb and kept in place until roots develop

1. Tip
2. Simple
3. Compound
4. Trench
5. Mound

3. List two points to consider when transplanting layerage plants.

    a.

    b.

4. Demonstrate the ability to:

    a. Propagate the tip layerage.

    b. Propagate by simple layerage.

    c. Propagate by air layerage.

PLANT PROPAGATION
UNIT XVIII

ANSWERS TO TEST

1. a. A
   b. B
   c. B
   d. A
2. a. 1
   b. 3
   c. 5
   d. 2
   e. 4
   f. 6
3. a. Prune vegetative growth so that its size stays in relation to size of new roots
   b. Remove plant from parent plant and handle the same as a rooted cutting
4. Performance skills evaluated to satisfaction of instructor.

ANALYSIS AND EVALUATION OF SUPERVISED EXPERIENCE PROGRAMS
UNIT XIX

UNIT OBJECTIVE

After completion of this unit, the student should be able to list reasons for enterprise and/or experience analysis. The student should also be able to calculate unit cost and analyze each enterprise and/or experience. This knowledge will be evidenced through demonstration and by scoring eighty-five percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. List four reasons for using enterprise analysis.
2. List strong and weak points of an enterprise and/or experience.
3. Calculate unit cost analysis.
4. Demonstrate the ability to analyze each enterprise and/or experience.

ANALYSIS AND EVALUATION OF SUPERVISED EXPERIENCE PROGRAMS
UNIT XIX

SUGGESTED ACTIVITIES

I. Instructor:

A. Provide student with objective sheet.

B. Provide student with information and assignment sheets.

C. Discuss unit and specific objectives.

D. Discuss information and assignment sheets.

E. Relate the information to the supervised farm training record book.

(NOTE: If student does not have projects with which to work assignment sheets, the instructor should provide him with necessary information to complete an analysis.)

F. Check assignment sheets.

G. Give test.

II. Student:

A. Read objectives.

B. Study information sheet.

C. Complete each assignment sheet pertaining to his projects or assigned by instructor.

D. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

A. Objectives

B. Information sheet

C. Assignment sheets

1. **Assignment Sheet No. 1--Breeding Enterprise Analysis**
2. **Assignment Sheet No. 2--Feeding Enterprise Analysis**

3. Assignment Sheet No. 3--Crop Enterprise Analysis

4. Assignment Sheet No. 4--Dairy Enterprise Analysis

5. Assignment Sheet No. 5--Supervised Agricultural Occupational Experience Analysis

D. Test

E. Answers to test

II. References:

A. *Nebraska Vocational Agriculture Supervised Experience Program.* Published by the Nebraska Vocational Agriculture Association and the Journal Printers, Fairbury, Nebraska 68352.

B. *Supervised Occupational Experience in Agriculture, Plans and Records.* The French-Bray Printing Co., Candler Building, Baltimore, Maryland 21202.

C. *Latest Preliminary County Estimates and State Agricultural Data.* Issued by State-Federal Division of Agricultural Statistics, 211 Federal Building, Box 81069, Lincoln, Nebraska 68501.

ANALYSIS AND EVALUATION OF SUPERVISED EXPERIENCE PROGRAMS
UNIT XIX

INFORMATION SHEET

I. Reasons for enterprise/experience analysis

  A. Aids in planning future farm and ranch operations

  B. Allows comparison of one enterprise or experience to another

  C. Aids in management decisions

  D. Evaluates efficiency as manager

II. Strong and weak points of enterprises and experiences

	Strong	Weak
A. Enterprises		
1. Breeding		
a.	90% or higher calf crop	Less than 90% calf crop
b.	125% lamb crop	Less than 125% lamb crop
c.	8.5 pigs weaned/litter	Weaning less than 8 pigs/litter
d.	Weighing regularly	No weight record
e.	Facilities to handle livestock	Poor facilities
2. Feeding		
a.	Feed efficiency	Poor feed conversion
b.	Good facilities	Poor feeding facilities
c.	Feeding a proper ration	Failure to feed a balanced ration
d.	Good water supply	Failure to provide adequate water supply
e.	Good parasite and disease control	Poor parasite and disease control
f.	Good management practice	Poor management (weighing, marketing, etc.)
3. Crops		
a.	Quality seed used	Failure to plant high quality seed
b.	Use of fertilizer	Failure to use fertilizer

INFORMATION SHEET

		Strong	Weak
	c.	Weed control	Poor weed control management
	d.	High yield	Yield too low
	e.	Seed bed preparation	Poor seed bed preparation
4.	Dairy		
	a.	Testing and records	Poor records and failure to test production
	b.	Good water supply	Poor supply of water
	c.	Sanitation	Poor sanitation
	d.	Good production	Production low
	e.	Parasite and disease control	Poor control of parasites and disease

B. Experience programs

1. Supervised agricultural occupational experience programs

a.	Good wage	Poor wage
b.	Good working conditions	Poor working conditions
c.	Fringe benefits	No fringe benefits
d.	Chance for advancement	No chance for advancement
e.	High percent raise	Low percent raise

(NOTE: The teacher may wish to give students the standards of the local community or the county. Students with the same enterprise and/or experience should compare and evaluate each other's records.)

III. Calculating unit cost

A. Breeding enterprise

1. Calf crop

$$\frac{\text{Total number of calves}}{\text{Total number of cows}} \times 100 = \text{percent calf crop}$$

2. Average weight of animal at weaning

$$\frac{\text{Total pounds at weaning}}{\text{Total number of calves}} = \text{average weight at weaning}$$

INFORMATION SHEET

B. Feeding enterprise

1. Total gain

$$\frac{\text{Finish weight - starting weight}}{\text{Total number of animals}} = \text{average gain per animal}$$

2. Average gain per head per day

$$\frac{\text{Average gain per head}}{\text{Total number of days on feed}} = \text{average gain per head per day}$$

3. Pounds of feed fed per animal

$$\frac{\text{Total pounds of feed fed}}{\text{Total number of animals}} = \text{pounds of feed fed per animals}$$

4. Pounds of feed per pound of gain

$$\frac{\text{Total pounds of feed fed per animal}}{\text{Total gain per animal}} = \text{pounds of feed per pound of gain}$$

5. Feed cost per pound of gain

$$\frac{\text{Pounds of feed per pound of gain} \times \text{feed cost}}{100} =$$

Feed cost per pound of gain

C. Crop enterprise

1. Yield per acre

$$\frac{\text{Total production (bushels, pounds, tons)}}{\text{Total acres}} = \text{units per acre}$$

2. Cost per unit of production

$$\frac{\text{Total cost (seed + tillage + fertilizer + etc)}}{\text{Total acres}} = \text{cost per acre}$$

ANALYSIS AND EVALUATION OF SUPERVISED EXPERIENCE PROGRAMS
UNIT XIX

ASSIGNMENT SHEET NO. 1--BREEDING ENTERPRISE ANALYSIS

Circle Enterprise
Beef, Sheep, Swine
Breed ____________________

Current School Year ______

Date Started ________________

Date Closed ______________

	Goals	Accom-plishments	Local Averages	State Averages
Number of breeding animals	______	______	______	______
Percent of calf crop	______	______	______	89%
Percent of lamb crop	______	______	______	110%
Number of pigs born per litter	______	______	______	9
Number of pigs weaned per litter	______	______	______	7.2
Weight of calves at weaning	______	______	______	420 lb. steers 400 lb. heifers
Weight of pigs at 35 days	______	______	______	20 pounds

Strong Points	Weak points
1.	1.
2.	2.
3.	3.

Suggestions for Improving Weak Points

1.

2.

3.

ANALYSIS AND EVALUATION OF SUPERVISED EXPERIENCE PROGRAMS
UNIT XIX

ASSIGNMENT SHEET NO. 2–FEEDING ENTERPRISE ANALYSIS

Circle Enterprise
Beef, Sheep, Swine
Breed ____________

Current School Year ____________

Date Started ____________

Date Closed ____________

	Goals	Accomplishments	Local Averages	State Averages
Number of animals on feed				
Starting weight of animals				
				240 lb. (Swine)
				(Sheep)
				(Beef)
Final weight of animals				
Number of days on feed				125 days (Swine)
				90 days (Sheep)
				125 days (Beef)
Total gain in pounds				
Total gain per day				1.6 lb. (Swine)
				.35 lb. (Sheep)
				2.75 lb. (Beef)
Pounds of feed fed				
Pounds of feed required per pound of gain				3.5 lb. (Swine)
				8.0 lb. (Sheep)
				8.0 lb. (Beef)

ASSIGNMENT SHEET NO. 2

Strong Points	**Weak Points**
1.	1.
2.	2.
3.	3.

Suggestions for Improving Weak Points

1.

2.

3.

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ANALYSIS AND EVALUATION OF SUPERVISED EXPERIENCE PROGRAMS
UNIT XIX

ASSIGNMENT SHEET NO. 3--CROP ENTERPRISE ANALYSIS

Type of Crop ____________ Current School Year ____________

Date Started ____________ Date Closed ____________

	Goals	Accom- plishments	Local Averages
Number of acres in enterprise	________	________	________
Amount of seed used per acre	________	________	________
Fertilizer used			
Kind	________	________	________
Pounds per acre	________	________	________
Cost per acre	________	________	________
Yield per acre	________	________	________
Cost per bushel, pounds, tons	________	________	________

Strong Points	Weak Points
1.	1.
2.	2.
3.	3.

Suggestions for Improving Weak Points

1.

2.

3.

ANALYSIS AND EVALUATION OF SUPERVISED EXPERIENCE PROGRAMS
UNIT XIX

ASSIGNMENT SHEET NO. 4--DAIRY ENTERPRISE ANALYSIS

Breed ____________________ Current School Year ____________

Date Started ______________ Date Closed ____________

	Goals	Accomplishments	Local Averages	State Averages	
Number of cows in production				22,885	DHIA
	______	______	______	152,000	All
Average production per cow				12,250 lb.	DHIA
	______	______	______	9,400 lb.	All
Average butterfat production per cow				459 lb.	DHIA
	______	______	______	390 lb.	All
Average butterfat percent per herd				3.7%	DHIA
	______	______	______	3.6%	All
Feed cost per pound of butterfat produced	______	______	______	$1.10	All
Food cost per 100 lb. of milk	______	______	______	$4.13	All

Strong Points

1.

2.

3.

Weak Points

1.

2.

3.

Suggestions for Improving Weak Points

1.

2.

3.

ANALYSIS AND EVALUATION OF SUPERVISED EXPERIENCE PROGRAMS
UNIT XIX

ASSIGNMENT SHEET NO. 5--EXPERIENCE PROGRAM ANALYSIS

List Occupational Objective ____________

Current School Year ____

Date Started ____________

Date Closed ____________

	Goals	Accomplishments	Local Averages	State Averages
Number of Hours Worked	________	________	________	________
Hourly Wage Received	________	________	________	$2.31*
% Increase in Wage Over Record Period	________	________	________	11.5%*

Strong Points

1.

2.

3.

Weak Points

1.

2.

3.

Suggestions for Improving Weak Points

1.

2.

3.

*Instructor update as required.

ANALYSIS AND EVALUATION OF SUPERVISED EXPERIENCE PROGRAMS
UNIT XIX

TEST

1. List four reasons for using enterprise/experience analysis

   a.

   b.

   c.

   d.

2. List two strong and two weak points for an enterprise and/or experience

Strong	Weak
a.	a.
b.	b.

3. Calculate unit cost analyses for the following problems.

   a. Bill Doe, a freshman, owns a Hereford steer. He purchased the steer September 1, and the steer weighed 600 pounds. He fed the steer for 140 days and the final weight was 1,000 pounds. What was the total weight gain and average gain per day?

      1) Total weight gain ____________________

      2) Average daily gain ____________________

   b. Joe Smith planted 20 acres of wheat which yielded a total production of 800 bushels. What was his yield per acre?

      ____

   c. John White is milking 20 Holstein cows with a total production of 266,800 pounds. What is the average production per cow and average butterfat per cow using 3.6% butterfat?

      1) Average production per cow ____________________

      2) Average butterfat per cow ____________________

4. Demonstrate the ability to analyze each of your enterprises and/or experiences.

   (NOTE: If this has not been accomplished prior to the test, ask the instructor when the above activity should be completed.)

ANALYSIS AND EVALUATION OF SUPERVISED EXPERIENCE PROGRAMS
UNIT XIX

ANSWERS TO TEST

1. a. Aids in planning future farm and ranch operations
   b. Allows comparison of one enterprise to another
   c. Aids in management decisions
   d. Evaluates efficiency as manager
2. Evaluated to the satisfaction of the instructor.
3. a. 1) 400 pounds
      2) 2.85 pounds
   b. 40 bushels
   c. 1) 13,340 pounds
      2) 480 pounds
4. Evaluated to the satisfaction of the instructor.